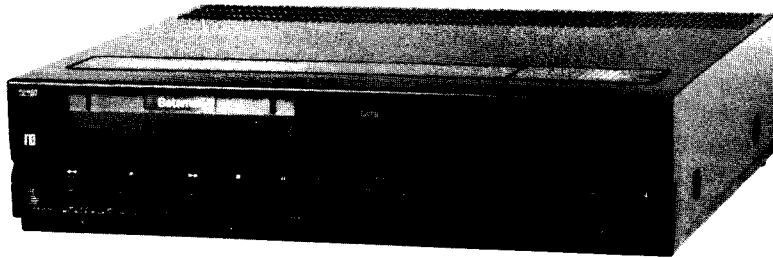


# SL-HF400

## RMT-124

## SERVICE MANUAL

*US Model*  
*Canadian Model*



**Super Beta hi-fi**

711B2 CHASSIS

April, 1985

This manual contains the Adjustment method.

### SPECIFICATIONS

#### System

Video recording system

Rotary two-head helical scanning

Audio recording system

Beta hi-fi system (2 channels)  
(Recording on the conventional  
audio track is monaural)

Video signal EIA standard, NTSC color

Usable cassettes Cassettes having the mark 

 : 1.33 cm/sec.

 : 2.0 cm/sec.

 : 4.0 cm/sec. (only for playback)

Maximum recording time

 : 5 hours

 : 3 hours 20 min.

(with sony L-830 cassette)

Fast-forward and rewind time

Approx. 3½ min.(L-500)

Audio frequency response

Beta hi-fi OFF

 : 50–10,000 Hz

 : 50–7,000 Hz

Beta hi-fi MPX FILTER OFF

 ,  : 20–20,000 Hz

Wow and flutter

Beta hi-fi ON

Less than 0.005% WRMS

Dynamic range

Beta hi-fi ON

More than 80 dB

#### Tuner section

Channel coverage

VHF channels 2 to 13

UHF channels 14 to 69

CATV channels 14 to 36, 98 and 99

VHF output signal

Channel 3 or 4 (selected)

75 ohms, unbalanced

Antenna

75-ohm antenna terminal for VHF  
and UHF

#### Inputs and outputs

Video input

Phono jack (1)

1 V p-p  $\pm 0.5$  V p-p, 75 ohms,  
unbalanced, sync negative

Video output

Phono jack (1)

1 V p-p  $\pm 0.5$  V p-p, 75 ohms,  
unbalanced, sync negative

Audio input

Phono jack (2)

–10 dBs (0 dBs = 0.775 V rms),  
more than 47 k ohms

Audio output

Phono jack (2)

–10 dBs (at load impedance  
47 k ohms)  
more than 10 k ohms



Consumer  
VIDEO



VIDEO CASSETTE RECORDER  
**SONY®**

— Continued on next page —

### Timer section

|                 |                                                                       |
|-----------------|-----------------------------------------------------------------------|
| Clock           | Synchronized with the power frequency                                 |
| Time indication | 12-hour cycle                                                         |
| Timer setting   | Only to start and stop recording<br>6 programs can be set over 7 days |

### General

|                       |                                                                                                           |
|-----------------------|-----------------------------------------------------------------------------------------------------------|
| Power requirements    | 120V ac $\pm 10\%$ , 50/60 Hz $\pm 0.5\%$                                                                 |
| Power consumption     | 42 W                                                                                                      |
| AC outlet             | Unswitched max. 400 W                                                                                     |
| Operating temperature | 5°C to 40°C (41°F to 104°F)                                                                               |
| Storage temperature   | -20°C to +60°C (-4°F to + 140°F)                                                                          |
| Dimensions            | Approx. 430 × 105 × 382 mm (w/h/d)<br>(17 × 4 1/4 × 15 1/8 inches)<br>incl. projecting parts and controls |
| Weight                | Approx. 10 kg (22 lb 1 oz) net                                                                            |

### Accessories supplied

|                                                                   |   |
|-------------------------------------------------------------------|---|
| 75-ohm coaxial cable with F-type connectors<br>(2 m, 6 feet)..... | 1 |
| Antenna connector EAC-25 .....                                    | 1 |
| Connecting cord RK-74A.....                                       | 1 |
| Remote Commander RMT-124 with two size<br>AA batteries.....       | 1 |

Design and specifications **subject to change** without notice.

### SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

### ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

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## PRECAUTIONS

### On safety

- Before operating, check that the operating power voltage and frequency of the unit are identical with those of your local power supply.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

### On installation

- Allow adequate air circulation to prevent internal heat build-up.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit and cassette tapes away from equipment with strong magnets, as for example a microwave oven or a large loudspeaker.
- Do not place any heavy object on the unit.

### On operation

- When the unit is not in use, turn the power off to conserve energy and to extend its useful life.
- Remove and store video cassettes after recording or playback.
- Store the cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.

### On cleaning

Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution.

Do not use any type of solvent, such as alcohol or benzene which might damage the finish.

### On repacking

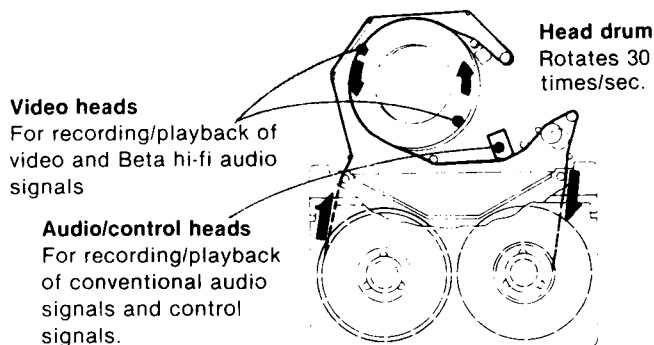
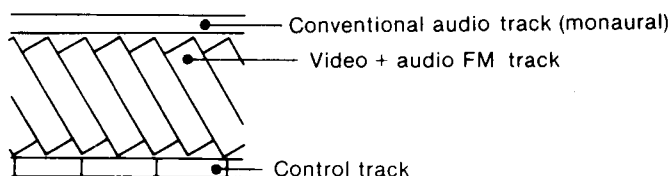
Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

## WHAT IS BETA HI-FI RECORDING?

In conventional recording, audio signals are recorded on the audio track and video signals on the video track. In Beta hi-fi recording, audio signals are recorded on the video track together with the video signals using 2 rotary video heads.

The Beta hi-fi audio signals are frequency-modulated and recorded on 2 channels, so that you can record a multichannel stereo program with sound quality far superior to that of the conventional audio recording.

### Beta hi-fi recording pattern on the video tape



When the BETA HI-FI selector is set to ON, this recorder records audio signals on the video track (Beta hi-fi recording) and on the conventional audio track at the same time, so that these tapes can also be played back on any ordinary video cassette recorder without a Beta hi-fi system.



## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

### LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

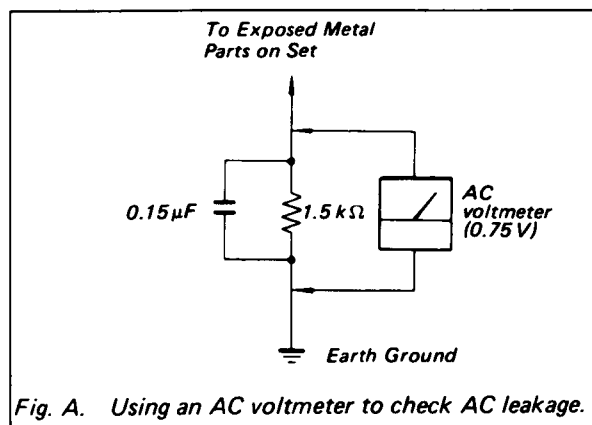


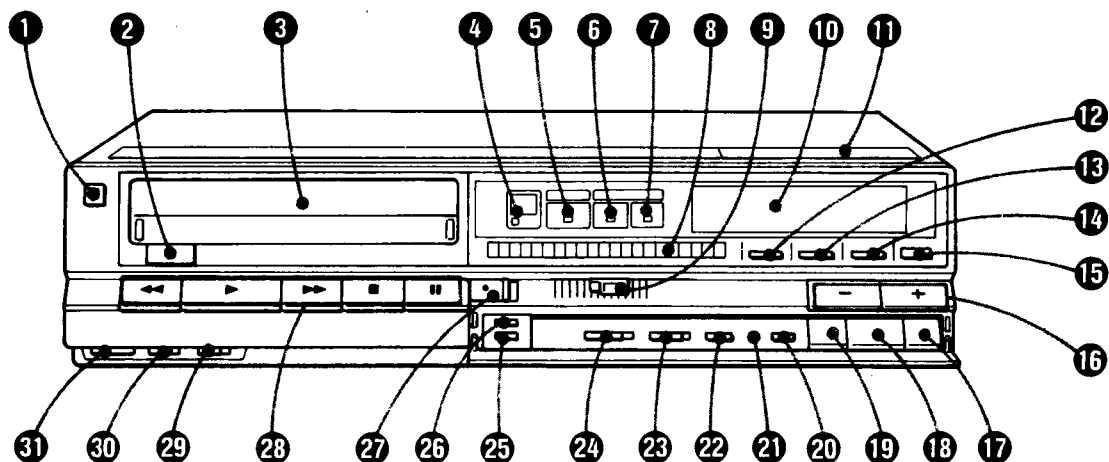
Fig. A. Using an AC voltmeter to check AC leakage.

# SECTION 1

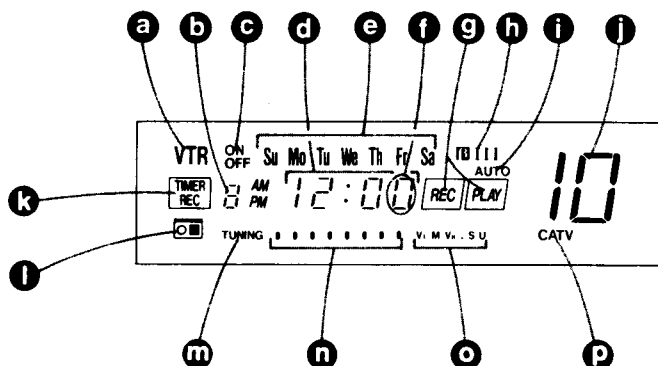
## GENERAL

### 1-1. LOCATION AND FUNCTION OF CONTROLS

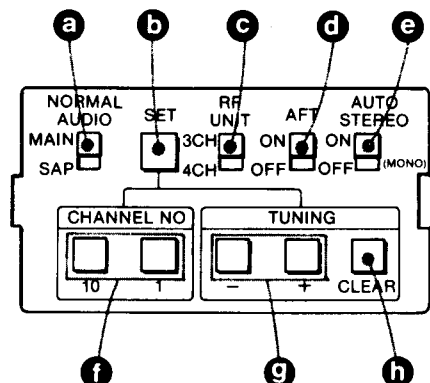
#### Front



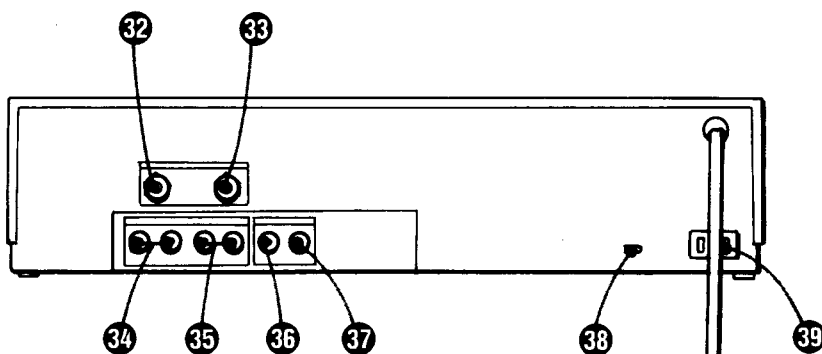
#### 10 Display window



#### 11 Tuning compartment



#### Rear



#### 1 POWER switch and indicator

Press to turn the power on. The indicator lights up. To turn the unit off, press the switch again. The timer section will continue to operate and the time will be displayed even if the POWER switch is off, as long as the ac power cord is plugged into a working outlet.

#### 2 EJECT button

Press this button to eject the cassette. In playback, rewind and fast-forward operations, if EJECT is pressed, tape transportation will stop and the cassette will be ejected.

#### 3 Cassette compartment

Insert a cassette here. To eject the cassette press EJECT.

- **Remote sensor**  
Detects the infrared transmitting signal from the supplied Remote Commander.
- **Beta hi-fi indicator**  
When recording with the BETA HI-FI switch at ON, this indicator lights up. When playing back a Beta hi-fi recorded tape, the indicator lights up regardless of the BETA HI-FI selector's position.
- **STEREO indicator**  
This indicator lights up when a stereo broadcast is received with the AUTO STEREO switch set to ON.
- **SAP (Second Audio Program) indicator**  
This indicator lights to show that the NORMAL AUDIO selector is set to SAP.
- **PEAK LEVEL METER**  
This meter shows the peak input level of the right and left channels during Beta hi-fi recording. During playback, this meter shows the recorded level.
- **REC LEVEL control**  
Adjust the recording level when the BETA HI-FI selector is set to ON. Usually set to 5 (green position). When you record sound from other audio equipment, adjust manually to the proper position to get the optimum result.
- **Display window**
  - Indicates the VTR mode.
  - Program position will change in numerical sequence when TIMER SET is pressed.
  - Lights when timer-activated recording turn-on or turn off is being set.
  - Time display and tape counter
  - The day of the week indication
  - Channel memory position to be selected while pre-setting channels.
  - Indicates recording or playback mode.
  - The tape speed selected is displayed.
  - Lights during automatic playback and automatic stop.
  - Channel display
  - While setting a timer-activated recording, TIMER will appear. When TIMER REC ON/OFF or QUICK TIMER is pressed, TIMER REC will appear.
  - Lights when a cassette is inside.
  - Lights when SET in the tuning compartment is pressed for presetting channels.
  - A sequence of dots show the speed and direction in which the tape is running. When a channel is being preset, the dots show the approximate location of the channel in the band.
  - Band indications: When a channel is being pressed, the band in which the channel is being tuned will light up.  
VL: VHF low, M: mid-band, VH-S: high and super band, U: UHF
  - Cable TV channel is selected.
- **Tuning compartment**
  - **NORMAL AUDIO (MAIN/SAP) selector**  
Select the sound to be recorded on the conventional audio track. Normally set to MAIN. If a Multichannel TV Sound broadcast is received, the MAIN sound will be recorded. To record SAP sound, set to SAP.
- **SET button**  
Press this button to tune in a channel to be preset. The TUNING indication appears in the window. After presetting, press again to set to release.
- **RF UNIT selector**  
Select the channel for the VCR program and the output from the VHF/UHF OUT connector. Set the selector to 3 CH or 4 CH, whichever is not active in your area.
- **AFT selector**  
Normally set to ON. The automatic fine tuning circuit locks in and maintains a sharp picture. When the signal is weak on a particular channel, set to OFF.
- **AUTO STEREO switch**  
Normally set to ON. A stereo broadcast will be received in stereo. When there is excessive noise in a stereo program due to a weak incoming signal, set the selector to OFF. The noise will be reduced but the sound will become monaural.
- **CHANNEL NO (number) buttons.**  
Change the channel number displayed to match the channel received. Press "10" to change the tens digit, and "1" to change units digit.
- **TUNING buttons**  
Press to tune in an active channel. Every time you press, a channel will be tuned in. The band indication, VL, M, VH-S or U, of the band being scanned to tune in a channel light up in the window.
- **CLEAR button**  
Press to cancel the memory of a particular channel in order to skip the unused channel.
- **CLOCK/COUNTER button**  
Select the display mode, tape counter or the clock.
- **CLEAR/RESET button**  
Press the button to reset the time counter to "00 00" and also to clear the timer setting.
- **TV/VTR button**  
Press this button to view the program selected on the recorder. The VTR indication appears in the display window.  
To view a different TV program than the one being recorded, press the button again so that the VTR indication disappears.  
When you press ► PLAY, the VTR indication reappears.
- **QUICK TIMER button**  
Press to start the timer recording quickly. The recording time is selected in 30 minute intervals, from 0:30 to 5:00. Press this button as many times as required until the desired recording time is displayed.
- **+/- buttons**  
Press to select the channels and to set the clock or timer programs.
- **TIMER REC ON/OFF button**  
Press to activate the timer recording. To deactivate the timer recording (including quick timer recording), press again.
- **NEXT button**  
Press to advance to the next item to be set during clock or timer setting.
- **TIMER SET button**  
Press this button as the first step in setting or resetting timer recording.

- 20 CHECK button**  
Press to check the contents of the timer presettings.
- 21 CLOCK button**  
Press this button as the first step in setting the current time.
- 22  $\text{II} / \text{III}$  selector**  
This selects the recording speed,  $\text{II}$  or  $\text{III}$ . The recording time of any given cassette in the  $\text{III}$  mode is 1.5 times that in the  $\text{II}$  mode.  
The playback speed is automatically set regardless of this selector's position.
- 23 MONITOR SELECT HI-FI/NORMAL selector**  
Select the sound to be played back.  
HI-FI: Normally set to this position. The sound recorded on the video track in Beta hi-fi will be heard.  
NORMAL: To monitor the sound recorded on the conventional audio track.
- 24 MONITOR SELECT STEREO/L/R switch**  
Select the channel(s) of the Beta hi-fi sound to be played back.  
STEREO: Usually set to this position. The stereo sound will be heard.  
L: To monitor the L channel of a stereo program.  
R: To monitor the R channel of a stereo program.
- 25 SHARPNESS control**  
Adjusts the sharpness of the picture if necessary. Usually set the control at the center detent position.
- 26 SUPER BETA switch**  
Normally keep this switch ON to obtain high quality recording/playback picture.  
Only if by setting this switch to "OFF", over-modulation in the playback of tapes recorded or played back on other VCRs seems to be eliminated, set this switch to "OFF".
- 27 REC (record) button**  
Slide to the right to start recording. The REC indication appears in the display window.
- 28 Tape transport buttons**  
**◀◀ REW (rewind) button:** Pressing this button during playback enables you to view a high-speed playback in reverse (Betascan).  
**▶ PLAY button:** When ◀◀ REW is kept pressed and ▶ PLAY is pressed, the tape returns to the beginning or to the point where the tape counter indicates "0000" then automatically begins to play back. While the tape is played back, PLAY indication will appear in the window.  
**▶▶ FF (fast-forward) button:** Pressing this button during playback enables you to view high-speed playback (Betascan).  
**■ STOP button:** Press to stop the tape running. When ◀◀ REW is kept pressed and ■ STOP is pressed, the tape returns and stops at the point where the tape counter indicates "0000". A sequence of dots will disappear.  
**|| PAUSE/|| STILL button:** Press to stop the tape momentarily during recording or playback. A still picture will be seen during playback. Press again to release pause mode.

- 29 MPX FILTER/PCM selector**  
MPX FILTER OFF: Usually set to this position.  
MPX FILTER ON: for recording FM broadcast programs (Only if your FM tuner has an internal MPX filter, set to OFF.)  
PCM: for PCM recording  
The setting of this switch is not necessary for TV recordings.
- 30 INPUT SELECT switch**  
Select the program to be recorded.  
TUNER: for recording TV programs  
LINE/PCM: for recording signals connected to VIDEO/PCM IN and LINE AUDIO IN.  
LINE AUDIO: for recording sound from LINE AUDIO IN and picture of TV program on FM simulcast recording
- 31 TRACKING control**  
If streaks or snow appears in the playback of a cassette which has been recorded on another video cassette recorder, turn this knob to obtain the best possible picture. Return the control to the center position after viewing the cassette.  
The center detent position provides the correct tracking for the cassettes recorded on this recorder.
- Rear**
- 32 VHF/UHF IN connector (F-type)**  
Connect the VHF and/or UHF antenna cable(s).
- 33 VHF/UHF OUT connector (F-type)**  
Connect to the VHF and/or UHF antenna terminal(s) of a TV receiver. The signal of a VCR program converted to channel 3 or 4 and the VHF/UHF TV signal will be supplied to the TV receiver.
- 34 LINE AUDIO IN jacks (phono type)**  
Connect the line output of a sound source such as a tape recorder, an amplifier, a tuner, or the audio output of another video cassette recorder.
- 35 LINE AUDIO OUT jacks (phono type)**  
Connect to the audio input of a color monitor, TV, another video cassette recorder, or connect to a stereo system.
- 36 VIDEO/PCM IN jack (phono type)**  
Connect to the video output of another video cassette recorder, camera adaptor, etc. For PCM recording, connect a PCM digital audio processor here.
- 37 VIDEO/PCM OUT jack (phono type)**  
Connect to the video input of a color monitor, TV or another video cassette recorder. For PCM playback, connect a PCM digital audio processor here.
- 38 BETA HI-FI selector**  
ON: Normally, set to this position. Recording will be done in Beta hi-fi. (A tape not recorded in Beta hi-fi will be played back conventionally.)  
OFF: Set to this position when recording only in the conventional (not Beta hi-fi) system.
- 39 AC OUTLET**  
This unswitched outlet supplies ac power to video or audio equipment with power consumption under 400 watts.

### Before making connections

- Turn off the TV.
- Connect the ac power cord after all the connections of the video cassette recorder and the TV have been completed.
- Make connections firmly. A loose connection may cause a distorted picture.

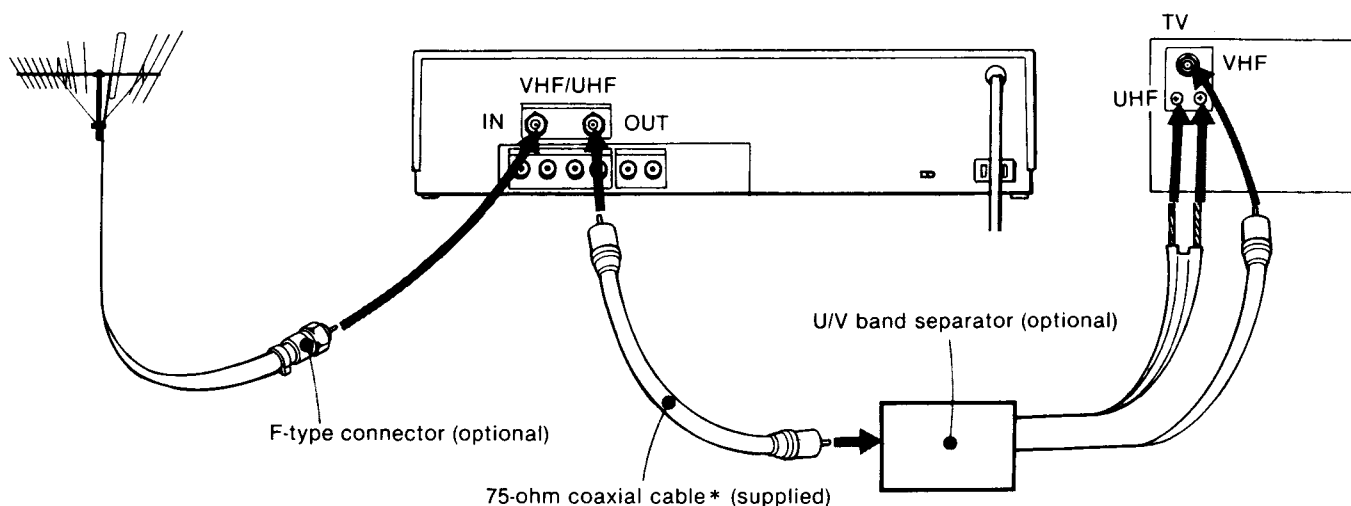
## 1-2. ANTENNA/CABLE AND TV CONNECTION

Disconnect the TV antenna cables from the TV receiver and connect them to the recorder, then connect the recorder and the TV.

### Combination VHF/UHF antenna

Most combination antennas are equipped with a U/V band separator (signal splitter). Take off the separator and connect the cable directly to the recorder.

Use the removed separator to connect the recorder and the TV.



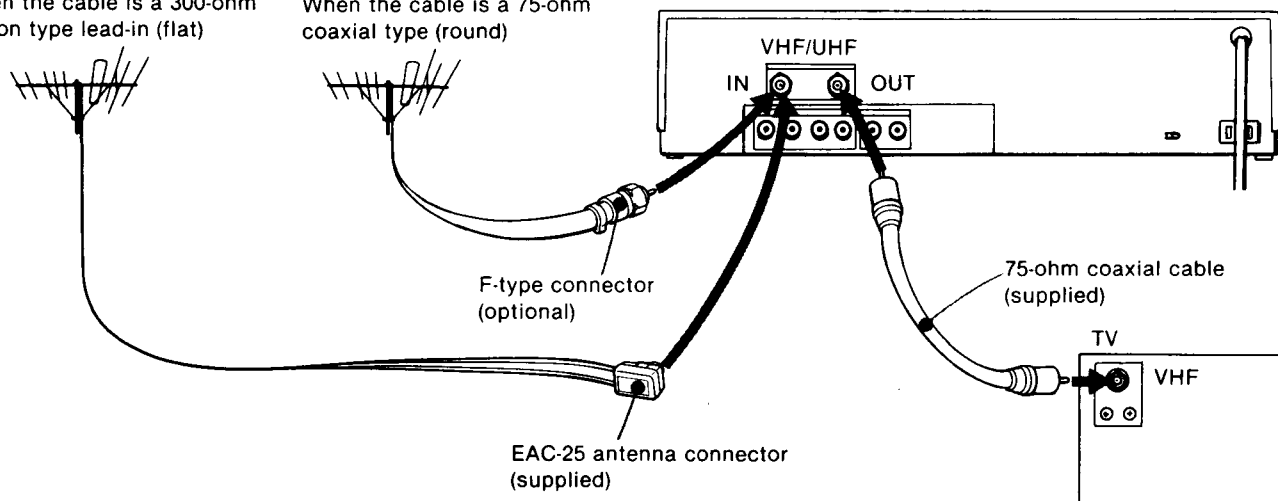
\*Use an optional RFC-8 extension cable (available in the U.S.A. and Canada), 8 m (25 ft) long, if the supplied 75-ohm coaxial cable is not long enough.

If you need a separator or a complete antenna system, see your Sony dealer or a qualified technician.

### VHF antenna

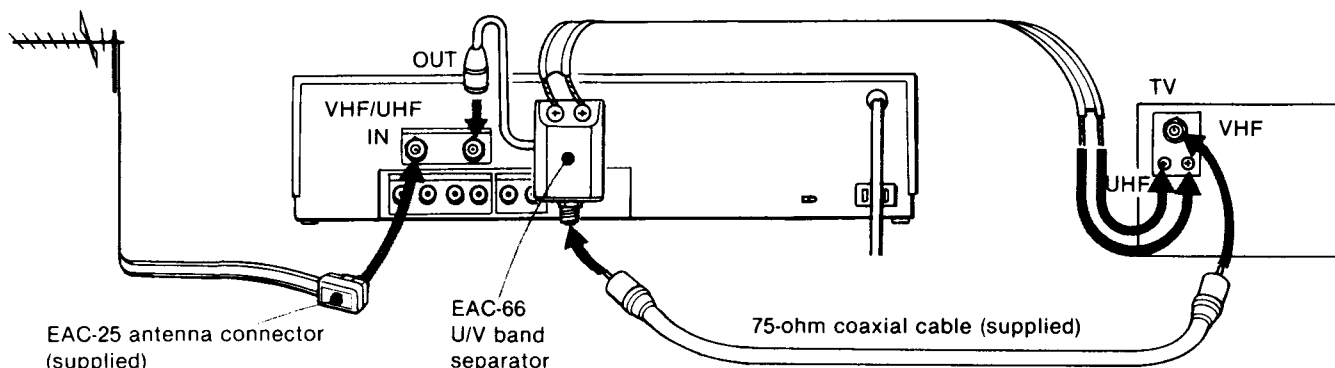
When the cable is a 300-ohm ribbon type lead-in (flat)

When the cable is a 75-ohm coaxial type (round)



### UHF antenna

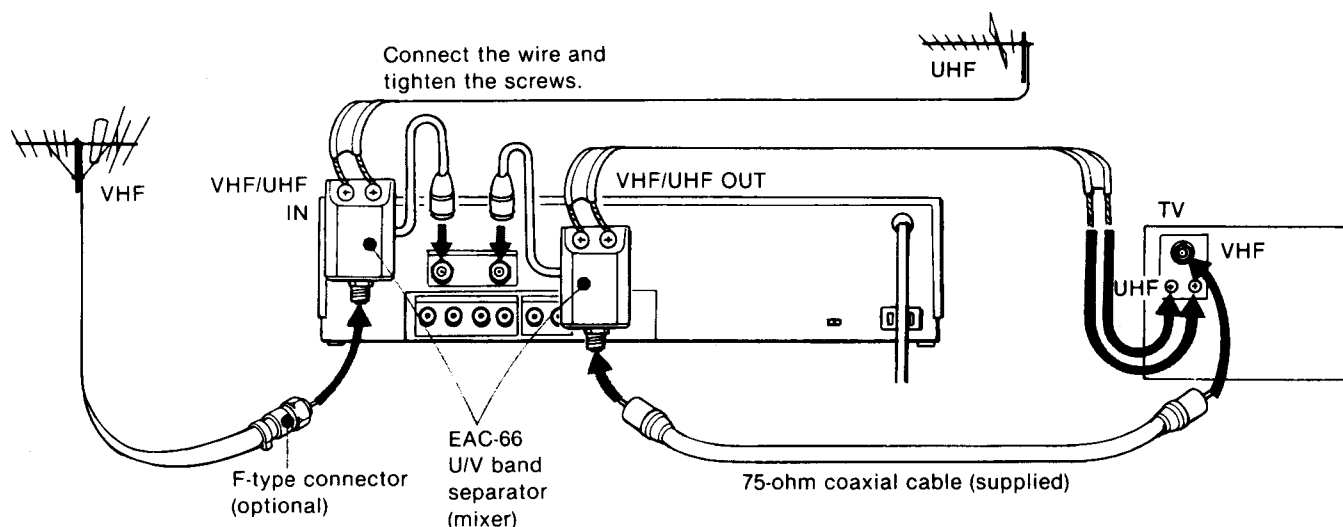
Attach an optional EAC-66 U/V band separator to the VHF/UHF OUT connector of the recorder, and connect to the VHF and UHF antenna terminals of the TV.



### When both VHF and UHF antennas are connected

Attach an optional EAC-66 U/V band separator (mixer) to the VHF/UHF IN connector of the recorder, and connect the antennas to the U/V band separator. Then attach another optional U/V band separator to the VHF/UHF OUT connector of the recorder, and connect to the VHF and UHF antenna terminals of the TV.

**When a TV has a 75-ohm UHF/VHF antenna terminal**  
Easy connection of the recorder to the TV can be made with a supplied 75-ohm coaxial cable regardless of the types of antenna.



### Caution

Connections between the recorder VHF/UHF OUT connector and the antenna terminals of a TV receiver should be made only as shown in these instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of rf devices.

Never connect the output of the recorder to an antenna or make simultaneous (parallel) antenna and recorder connections at the antenna terminals of your receiver.

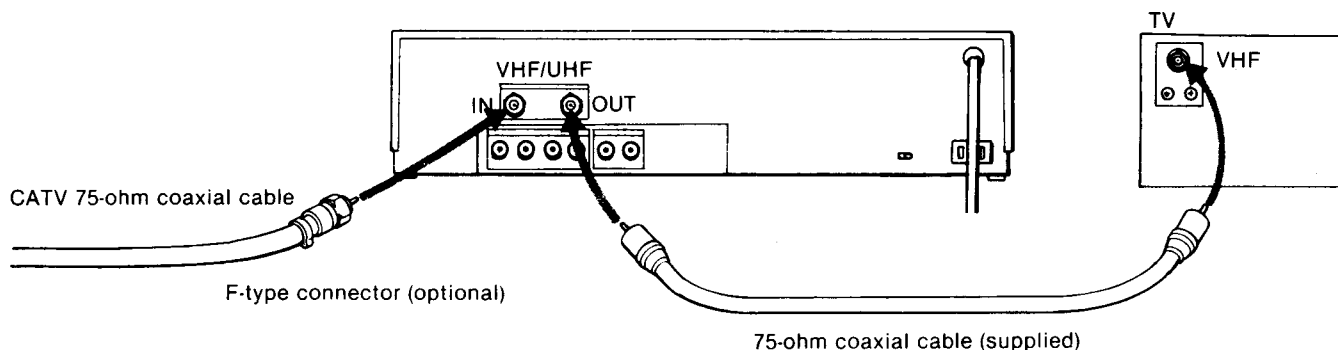
Once the connections explained above have been made, the antenna TV signals, as well as the signal from the recorder, will be fed to the TV and you can view TV programs in the usual way.

### Note

Keep the VCR away from the TV, if the display or sound is affected.

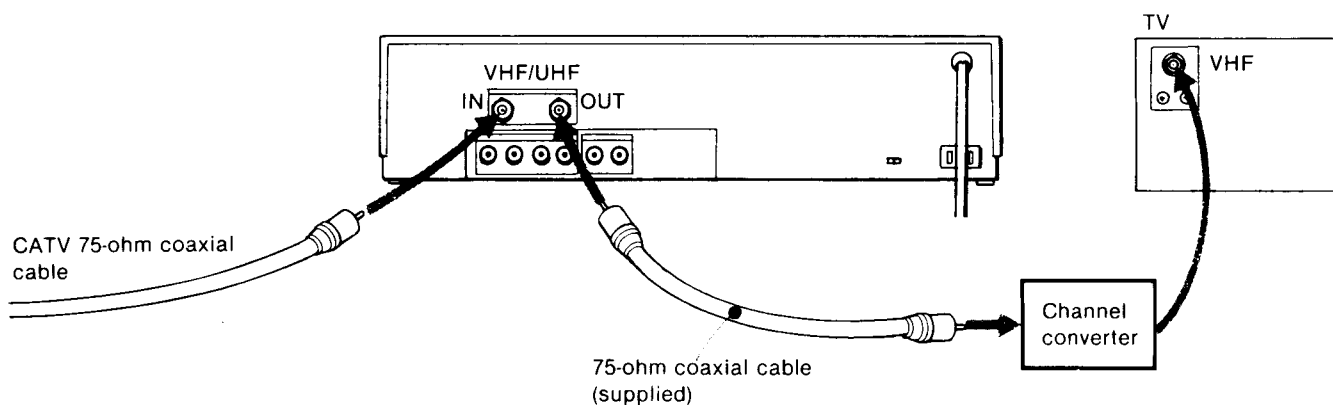
## CATV cable

We recommend that you consult your cable company to make sure that the cable is properly connected.



### When a TV is not a CATV compatible type

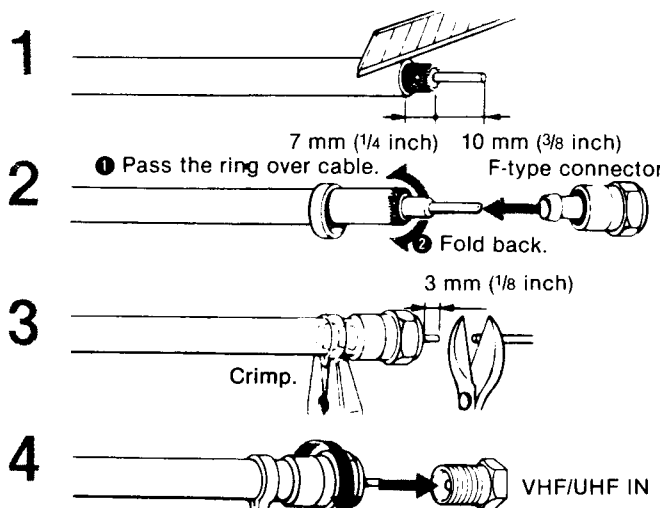
Connect the CATV channel converter between the recorder and the TV so that you can watch another CATV program while recording one CATV program. (The TV/VTR button is set to TV.)



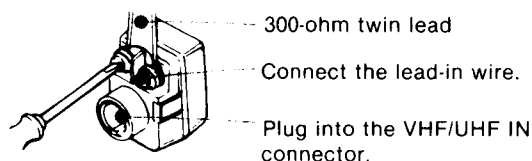
### Note to CATV system installer in the U.S.A.:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

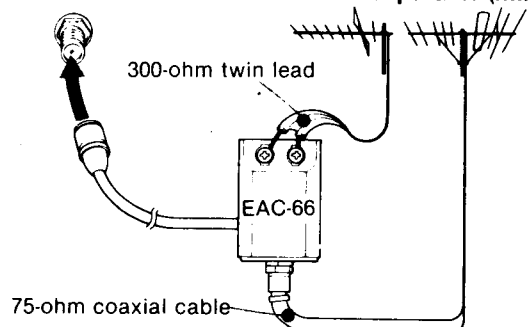
#### How to attach an F-type connector



#### How to attach an EAC-25 external antenna connector



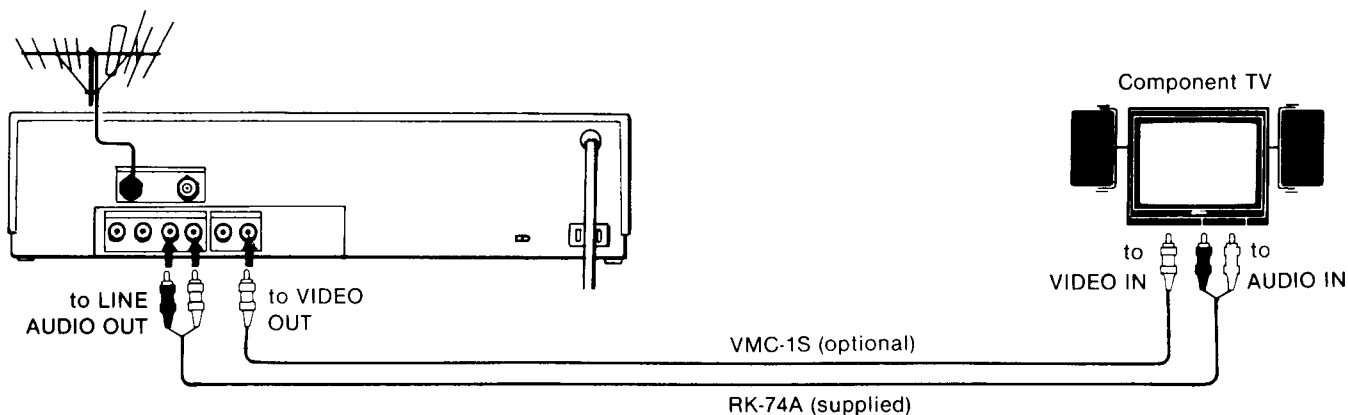
#### How to attach an EAC-66 U/V band separator (mixer)



## CONNECTING A COLOR MONITOR

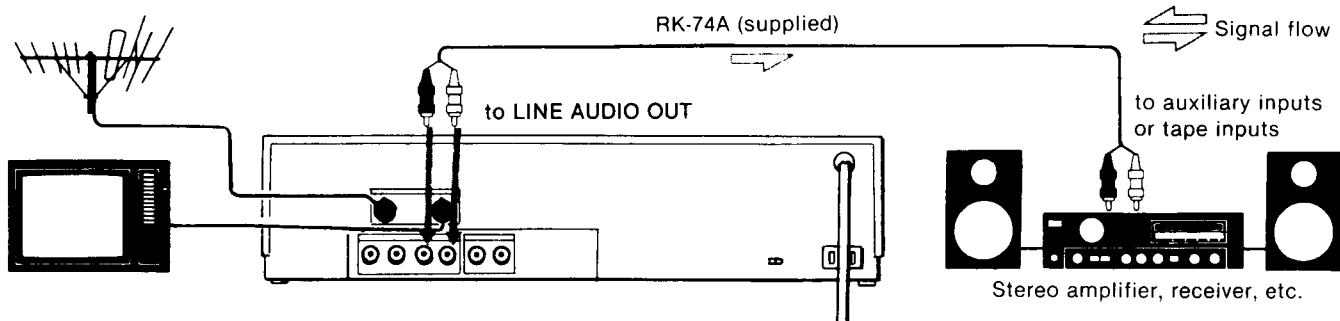
To obtain a better-quality picture, connect a color monitor, such as the Sony Profeel Trinitron Component TV, instead of a conventional TV receiver. When a component TV is combined with the speaker system as illustrated, you can enjoy tapes recorded with Beta hi-fi stereo.

If you use a component TV tuner together with the monitor, connect the recorder and the TV tuner in the same way as in the case of the recorder and the conventional TV receiver described on pages 9 and 10. For details on the connection of the TV tuner and the monitor, refer to the instruction manual of the TV tuner.



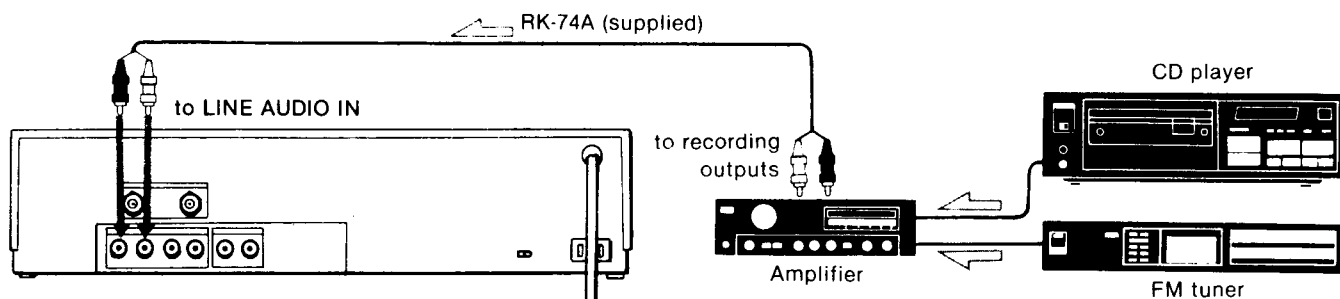
## 1-3. CONNECTION TO AN AUDIO SYSTEM

You can enjoy tapes recorded with Beta hi-fi stereo when the recorder is connected to your audio system.



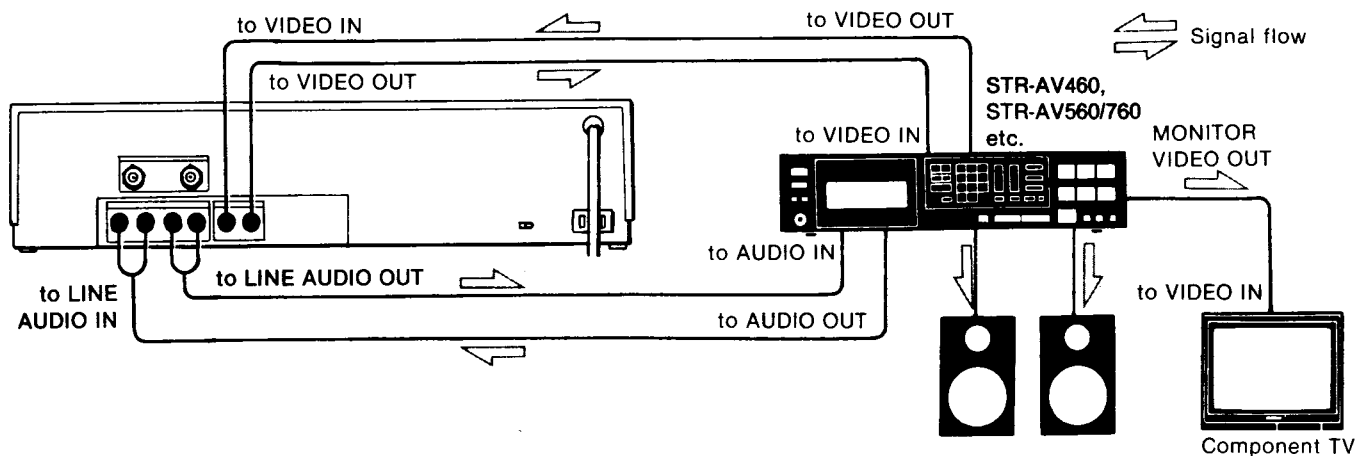
### To record audio signals only from your audio system

You can record audio source such as an FM tuner, CD player, with the Beta hi-fi system without recording video signals.





## Connection to a receiver equipped with VIDEO connectors

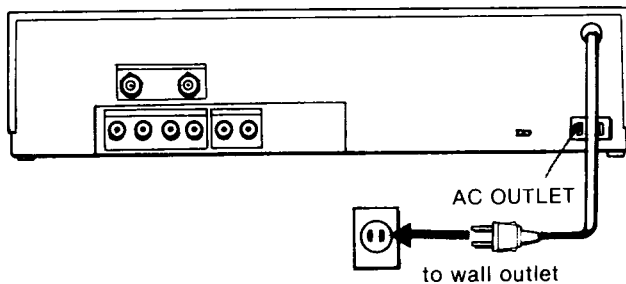


For details, see the instruction manual of the receiver.

### Notes

- If the VCR is installed near a tuner or a radio, noise may be heard in AM reception. In this case, keep the VCR away from the tuner or the radio, adjust the AM bar antenna for minimum noise, or connect an external AM antenna to the tuner.
- Before connecting or disconnecting the power cord of the VCR, be sure to turn the connected amplifier off.

## 1-4. POWER CONNECTION



When you insert the power plug into a wall outlet, all numerals in the display window will light up for about six seconds (and the tape loading mechanism may also run a little). All functions will not operate at this step, although the power indicator lights up. After these six seconds, the power is turned off. To supply power to the recorder, press the POWER switch.

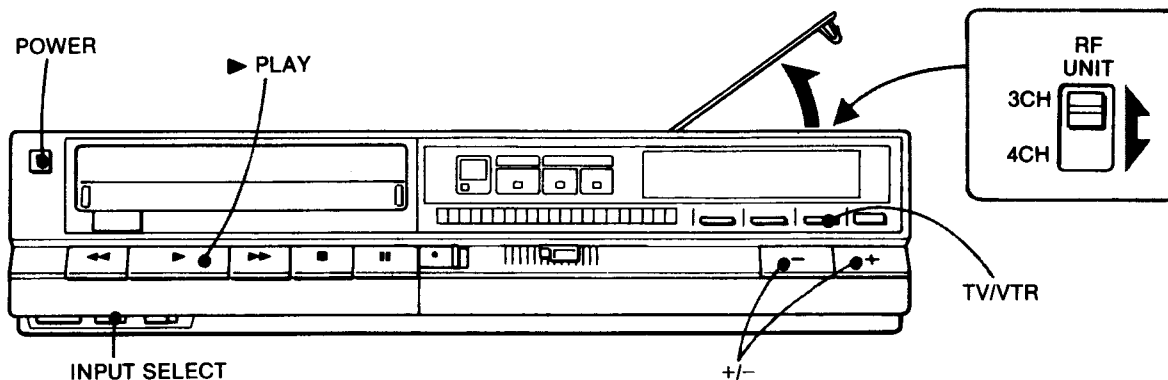
### AC OUTLET

This socket provides a convenient ac power source for other video or audio equipment whose power consumption is under 400 watts. Power will be supplied to the connected equipment even if the recorder is turned off.

- Do not connect here any electrical home appliances whose power consumption exceeds 400 watts, such as an electric iron or fan.

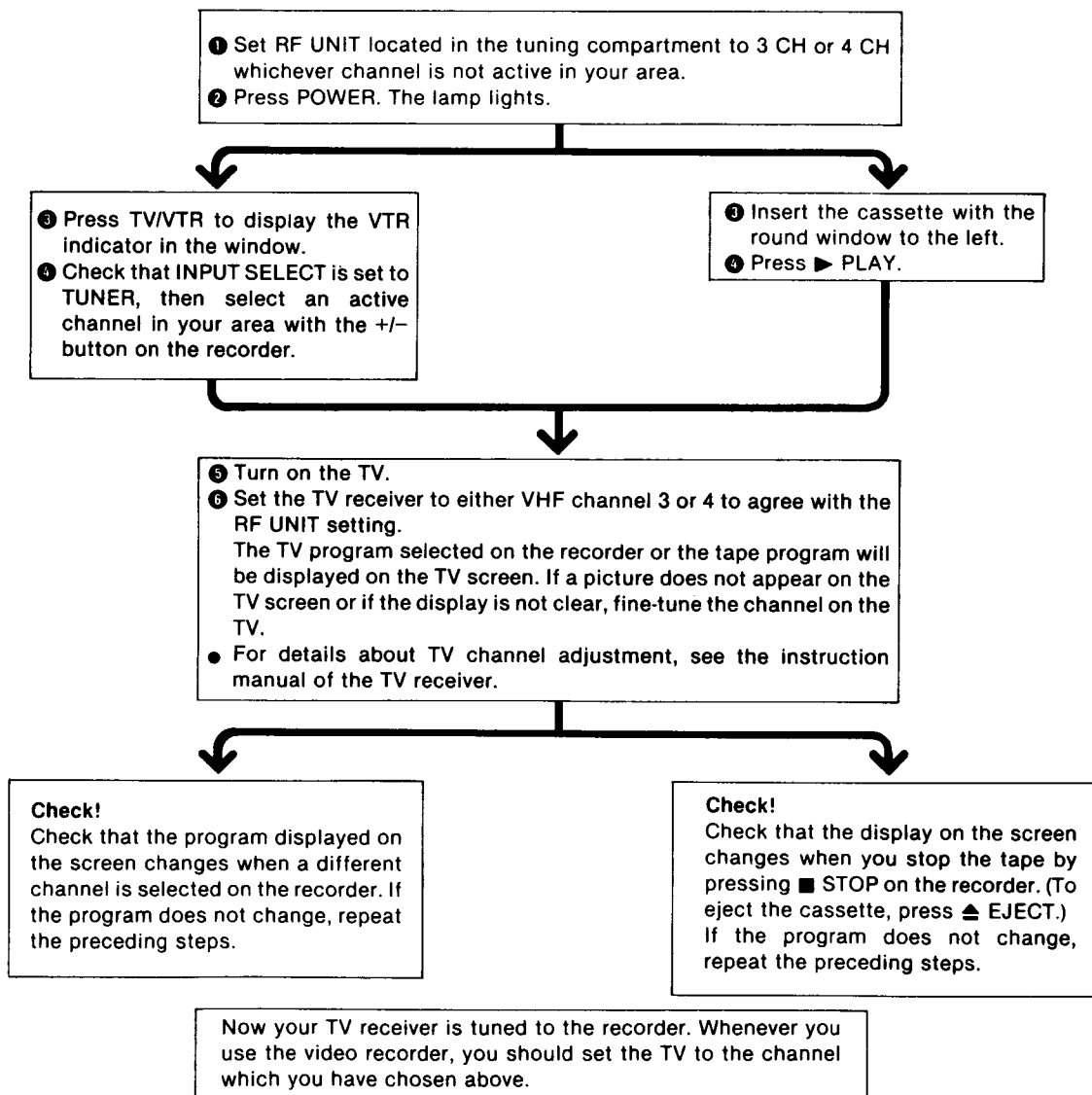
## 1-5. ADJUSTING THE TV

Your TV receiver must be adjusted to receive the signal from your recorder. If you connect a color monitor, it does not need adjusting.



**If you do not have a recorded video cassette tape**

**If you have a recorded video cassette tape**

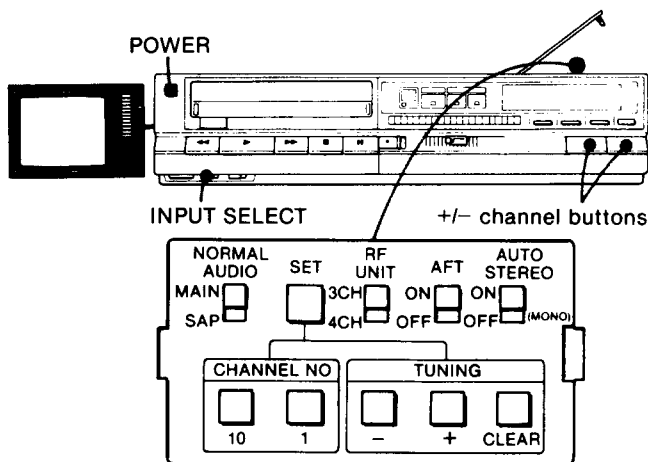


## 1-6. PRESETTING THE ACTIVE CHANNELS IN YOUR AREA

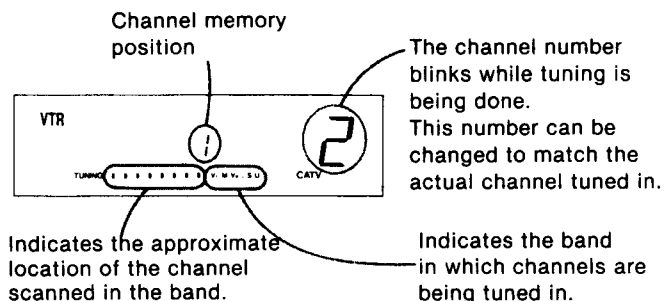
Your recorder is capable of receiving VHF channels 2-13, UHF channels 14-69 and cable TV channels 14-36 (A to W), 98 (A-2) and 99 (A-1). See cable TV channel chart below.

You can preset 14 channels so that only the desired channels will appear in sequence when you press the + or - channel button on the recorder and on the supplied Remote Commander.

To start presetting, turn on the recorder and set the INPUT SELECT switch to TUNER. Turn on the TV and select the channel to view the recorder's picture (channel 3 or 4).



## TUNING CHANNELS



- 1 Press SET.  
The TUNING indicator will appear in the window.
- 2 Select the channel memory position with the + or - channel button for the desired channel to be tuned in.
- 3 Press + or - TUNING (on the tuning compartment) once. The first channel appearing on your TV will be memorized.  
If this is not the channel you wish, then repeat pressing TUNING + or - until the desired channel appears on your TV.  
Every time you press TUNING: a higher-numbered channel will be tuned in by pressing + and a lower-numbered channel by -.
- 4 Repeat steps 2 and 3 for other channel memory positions to be tuned in.
- 5 When all the desired channels have been tuned in, press SET. The display window will return to the clock indication. Making sure that AFT is set to the ON position, close the lid.

## TO CHANGE THE CHANNEL DISPLAY

The channel number display at the far right of the indication window can be made to indicate the actual channel received.

Press CHANNEL NO "10" to change tens digit display and "1" to change the units digit display.

Every time "10" is pressed, the display changes:  
Blank → 1 → 2 → 3...8 → Blank → 1 → 2 → 3

CATV CATV CATV CATV

Every time "1" is pressed, the display changes:  
0 → 1 → 2 → 3...9

## TO CANCEL AN UNUSED CHANNEL

You can cancel unused channels so that only desired channels will appear in sequence when you press the +/- channel buttons on the recorder and on the supplied Remote Commander.

- 1 Select the channel to be cancelled with the + or - button.
- 2 Press SET so that the TUNING indicator appears.
- 3 Press CLEAR. The channel number will be changed to "\_\_\_".
- 4 Press SET again. The clock indication will appear.  
When the channel number buttons on the Commander are pressed, the sound of the cancelled channel will be muted.

## TO FINE-TUNE A WEAK STATION

If the picture of a particular channel is not acceptable, set AFT to the OFF position and keep + or - TUNING pressed until the picture becomes clearer. Every time you select this particular channel, set AFT to the OFF position. (To view other channels, do not forget to set AFT to ON.)

## Cable TV channel chart

Cable TV systems use letters or numbers to designate channels. To tune in a channel, refer to this chart.

|                          |    |    |    |    |    |    |    |    |    |     |     |    |    |    |    |
|--------------------------|----|----|----|----|----|----|----|----|----|-----|-----|----|----|----|----|
| CATV channels in numbers |    |    |    |    |    |    |    |    |    | 98  | 99  | 14 | 15 | 16 | 17 |
| CATV channels in letters |    |    |    |    |    |    |    |    |    | A-2 | A-1 | A  | B  | C  | D  |
| 18                       | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28  | 29  | 30 |    |    |    |
| E                        | F  | G  | H  | I  | J  | K  | L  | M  | N  | O   | P   | Q  |    |    |    |
| 31                       | 32 | 33 | 34 | 35 | 36 |    |    |    |    |     |     |    |    |    |    |
| R                        | S  | T  | U  | V  | W  |    |    |    |    |     |     |    |    |    |    |

Check with your local cable TV company for more complete information on the available channels.

\*The designation of the cable TV channels conforms to the EIA/NCTA recommendation.

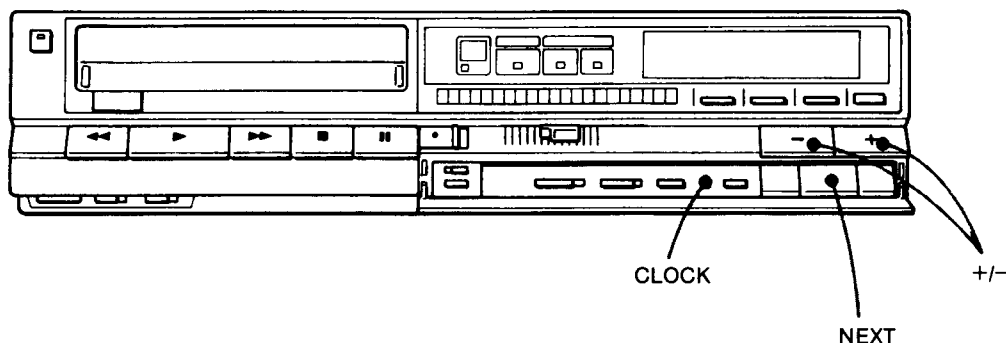
## Note

Pay cable TV systems use scrambled or encoded signals and require special converters (decoders) in addition to the normal cable connection.

## 1-7. SETTING THE CLOCK

When you connect the ac power cord to a wall outlet, the clock indicates "Su AM 12:00" after 6 seconds and will blink to show that it must be set.

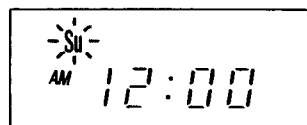
AM 12:00 = Midnight



Example: To set for Wednesday afternoon at 3:56

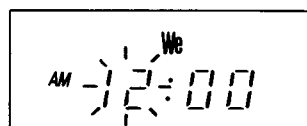
1 Press CLOCK.

Set the day with the + or - button.



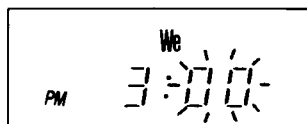
2 Press NEXT.

Set hours with the + or - button.



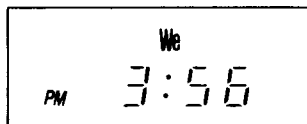
3 Press NEXT.

Set the minutes with the + or - button.



4 For accurate setting, press NEXT at the same time with an announced time signal.

The clock will now show the current time.



The dots of the colon (:) alternately blink every 30 seconds.

### +/- buttons

The + and - buttons can be used in two ways:

When you keep the button pressed, the digits will advance continuously until the button is released.



When you press and immediately release the button, the digits will advance by one.



## 1-8. TV PROGRAM RECORDING

### Caution

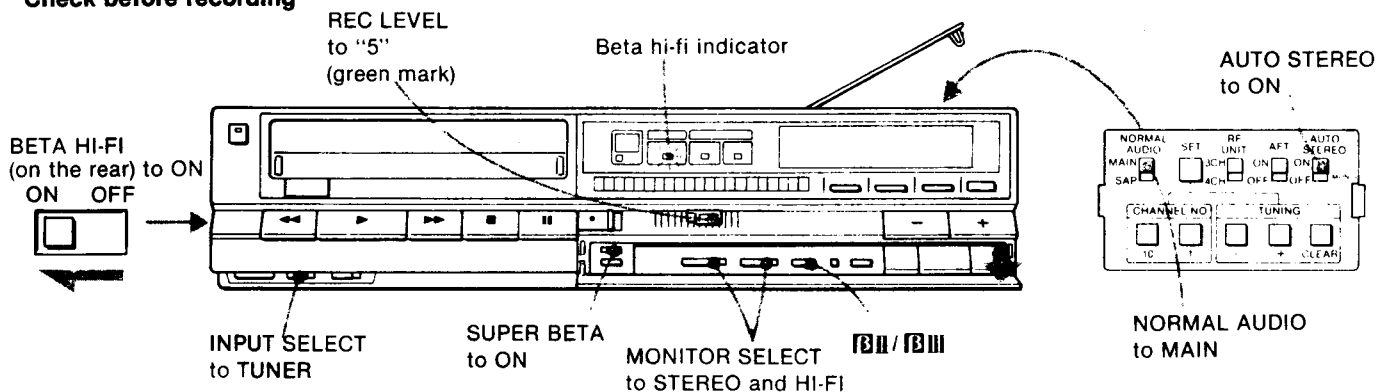
Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws.

Also, use of this recorder with cable television transmission may require authorization from the cable television transmitter and/or program owner.

### Note

The power is automatically turned on when a cassette is inserted, even though POWER is not pressed. However, this is to protect the unit from damage due to the insertion of a cassette without first turning on the power. Always turn on the power by pressing POWER before inserting a cassette.

### Check before recording



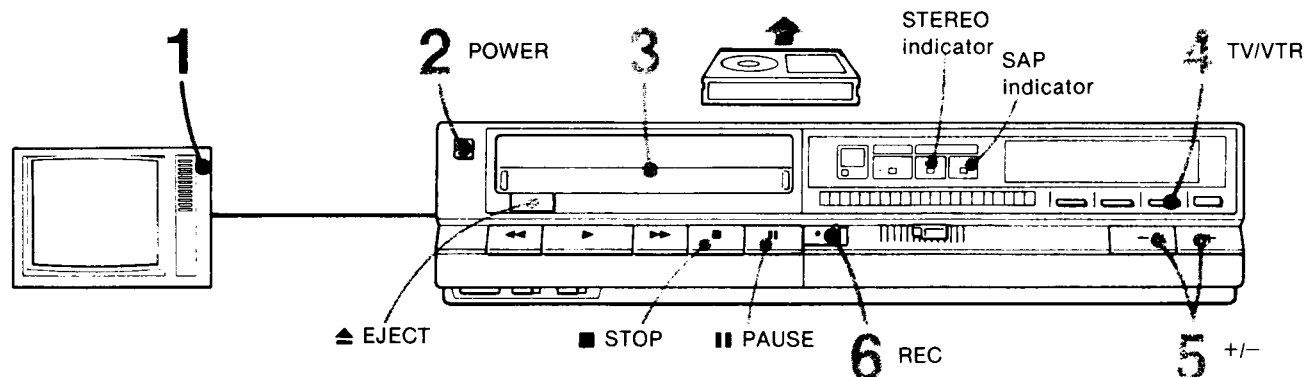
When BETA HI-FI is set to ON, recording is done both on the video track (Beta hi-fi recording) and on the conventional audio track.

### Recording time available in each mode

| Cassette used | II mode       | III mode      |
|---------------|---------------|---------------|
| L-125         | 30 min.       | 45 min.       |
| L-250         | 1 hr.         | 1 hr. 30 min. |
| L-500         | 2 hr.         | 3 hr.         |
| L-750         | 3 hr.         | 4 hr. 30 min. |
| L-830         | 3 hr. 20 min. | 5 hr.         |

### Recording

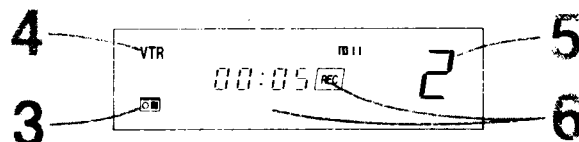
Numbers in the illustration show the sequence of operation.



- 1 Turn on the TV and select the channel for the video recorder: channel 3 or 4.
- 2 Press POWER on the recorder to turn the power on.
- 3 Insert a cassette.
- 4 Press TV/VTR to select the VTR mode.
- 5 Select the channel to be recorded with the + or - button.
- 6 Slide REC to the right. Recording will start. If the tape reaches the end during recording, the tape will be rewound to the beginning automatically.

### Check in the window

The numbers correspond to the step number of each recording operation.



To stop recording, press ■ STOP.

To eject the cassette, press ■ STOP, then ▲ EJECT.

To stop the tape momentarily, press ■ PAUSE.

To resume recording, press the button again. If you do not resume recording more than about 8 minutes, the pause mode will be automatically released.

In case you want to record a tape which is to be played back on another recorder from the very beginning of the tape, run the tape for about 15 seconds before starting recording. Otherwise you may miss the starting point during playback on the other machine.

## TO RECORD MULTICHANNEL TV SOUND (MTS) BROADCASTS (STEREOCASTS)

Make sure AUTO STEREO in the tuning compartment is set to ON.

In the years to come, an increasing number of programs will be broadcast in stereo. Called Multi-channel TV Sound or MTS, the new technology will greatly enhance TV viewing by bringing you programs with high fidelity stereo sound.

MTS also provides for an extra channel called the Second Audio Program or SAP which broadcasters can use to transmit a second language for bilingual transmissions or some other sound track.

### To record a stereo broadcast

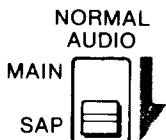
Set BETA HI-FI selector on the rear panel to ON. When the STEREO indicator lights up, a stereo broadcast is being received. The recording procedure is the same as usual.



### To record a SAP (Second Audio Program) broadcast

Set NORMAL AUDIO to SAP. The SAP indicator will light up. If recording is made when there is a SAP broadcast, the SAP sound will be recorded on the conventional audio track while the MAIN sound is recorded on the video track in Beta hi-fi.

To listen to the SAP sound, set MONITOR SELECT to NORMAL.



### To record a MAIN broadcast only

Set NORMAL AUDIO to MAIN. The MAIN sound will be recorded on the video track and the conventional audio track.

#### Note

- When a SAP sound is not to be recorded, be sure to set NORMAL AUDIO to MAIN. If it is set to SAP and there is no SAP broadcast, no sound is recorded on the conventional audio track.
- You may find more noise in the reproduction of the audio of SAP than in that of the main sound.

## TO VIEW ONE TV PROGRAM WHILE RECORDING ANOTHER

Press TV/VTR so that the VTR indicator disappears from the display window. Select the channel you want to view on the TV.

TV/VTR



## TO KEEP A RECORDED PROGRAM FROM BEING ACCIDENTALLY ERASED

When a new recording is made on a previously recorded cassette, the previous recording will be automatically erased.

### To avoid erasing a recording

Break off the safety tab using a screwdriver or similar object. The cassette will be ejected automatically even when you slide REC to the right.



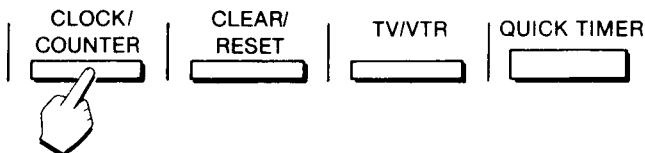
### To re-record on a cassette which has had its safety tab removed

Cover the hole with a piece of plastic tape.



## USE OF THE TAPE COUNTER

Turn on the power and press CLOCK/COUNTER to display the counter reading in the display window. To return the display to the present time, press CLOCK/COUNTER again.



Before starting recording or playback, press CLEAR/RESET to set the counter to "00 00".

By noting the counter reading at the desired point, you can easily find that point later by referring to the counter.

Automatic playback or stop is possible at the tape counter "00 00" after rewinding. See "AUTO PLAY/STOP" on page 21.

#### Notes

- The counter reading is automatically reset to zero when a cassette is newly inserted.
- While the power is off, the display shows the present time, regardless of CLOCK/COUNTER setting.
- The counter reading will be retained in the memory even after the power is turned off, as long as the cassette is in the cassette compartment.
- The tape counter does not operate when a blank, unrecorded tape is played. Use it to find a blank part of the tape.

## TO START RECORDING FROM A PARTICULAR POINT

You can decide the starting point for recording while watching the playback picture or by searching for the point using the Betascan and Beta SkipScan functions.

- 1 Search for the point where you wish to start recording on the tape by playing back the tape or using the Betascan or the Beta SkipScan function.
- 2 Press **|| PAUSE** to stop the tape where you wish to start recording.
- 3 Slide REC to the right. The recorder will enter the record pause mode and the picture selected by INPUT SELECT will appear on the monitor screen.
- 4 Press **|| PAUSE** to release the pause mode. Recording starts.

- At the starting point of recording, the picture may be distorted or streaks may appear.

### NOTE

#### ABOUT THE SUPER BETA SWITCH

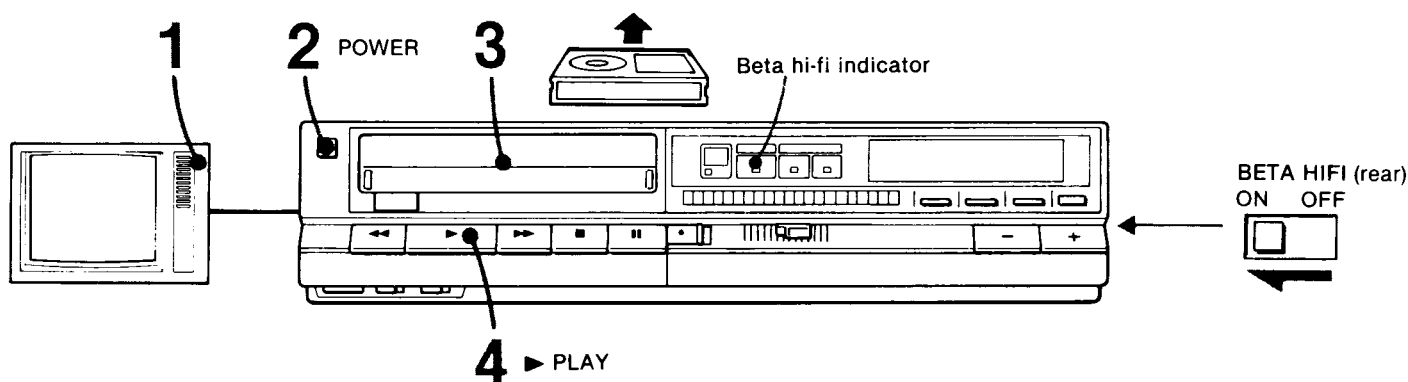
Normally keep this switch in the "ON" position to obtain high picture quality recording and playback.

Tapes recorded in other non-SuperBeta VCRs can be played on SuperBeta VCRs.

Tapes recorded in SuperBeta can be played on other non-SuperBeta VCRs. However, some over-modulation noise may appear in the picture during playback. If you intend to play back on other non-SuperBeta VCRs, then set the SuperBeta switch to "OFF" position when making your recordings.

## 1-9. PLAYBACK

Numbers in the illustration show the sequence of operation.



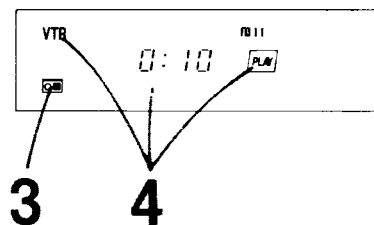
- 1 Turn on the TV and select the channel for the video recorder: channel 3 or 4.
  - 2 Press POWER on the recorder to turn the power on.
  - 3 Insert the cassette.
  - 4 Press **▶ PLAY**. Playback will start.
- If the tape reaches the end during playback, the tape will be automatically rewound to the beginning.
  - The Beta hi-fi indicator will light up when a Beta hi-fi recorded tape is played back.

### Note

- If you are playing back a tape that was recorded on another VCR, noise (if any) in the picture may be eliminated by setting the SUPER BETA switch to OFF. Normally, keep this switch at ON.
- To change to channel 3 or 2 on your TV from the channel on which you have been viewing something from the video recorder, be sure to press TV/VTR **first** and then change to channel 3 or 2 on your TV. If TV/VTR is pressed after channel 3 or 2 is set on your TV, you might not get a picture. In this case, change your TV channel to another channel and then come back to channel 3 or 2.

### Check in the window

The numbers correspond to the step numbers of playback operation.



## TO SELECT THE MONITOR SOUND



### Playback of Beta hi-fi stereo sound programs

Set the above selectors to HI-FI and STEREO.

When the recorder is connected to a Component TV, a stereo system or stereo headphones, you can enjoy stereo sound reproduction.

When a conventional (monaural) TV is connected, the sound of the left and right channels are mixed so that monaural sound comes from the TV speaker.

### To select the left or right channel of stereo programs

Set the above selectors to HI-FI and L or R.

Select the position L or R to play back the channel you wish to listen to.

### Playback of SAP sound

To listen to the SAP sound that was recorded by setting the NORMAL AUDIO selector to the SAP position, set the MONITOR SELECT (HI-FI/NORMAL) selector to NORMAL.

## WHEN YOU PLAY BACK A TAPE RECORDED ON ANOTHER VCR

- If the VCR on which the tape was recorded is not equipped with the Beta hi-fi system, the recorder will play back the tape in the conventional way.
- If streaks or snow appear, adjust TRACKING for the best possible picture. Return the control to the center position after viewing that tape.



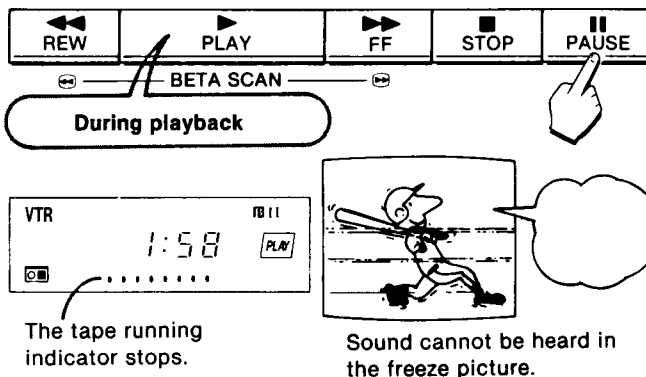
- To get a sharp picture, turn SHARPNESS toward SHARP.



## VARIOUS PLAYBACK MODES

### FREEZE PICTURE

Press **PAUSE** during playback.

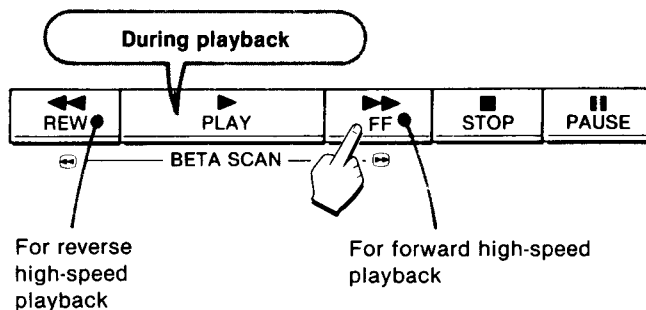


### Automatic pause release

To protect the video heads and the tape, the pause mode will be automatically released after about 8 minutes and playback will resume.

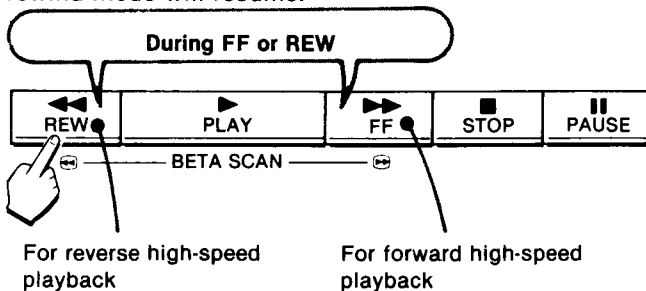
### BETASCAN Viewing the picture at a fast speed to find a particular scene

Press **FF** or **REW** during playback. When you release the button, the normal playback will resume.

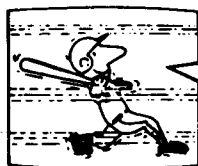


### BETA SKIPSCAN Viewing the picture momentarily during fast-forward or rewind

Press **FF** or **REW** during fast-forward or rewind mode. When you release the button, the fast-forward or rewind mode will resume.



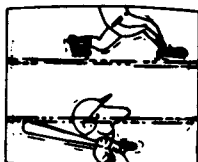




Streaks will appear and sound will be muted in the Betascan picture or Beta SkipScan picture.

#### Notes

- If the picture rolls vertically, adjust the vertical hold control on the TV.



- During Betascan, the Beta hi-fi indicator may sometimes not light even when a Beta hi-fi recorded tape is played back.
- The pause, Betascan and Beta SkipScan functions cannot be activated with the **IBI** recorded tape.

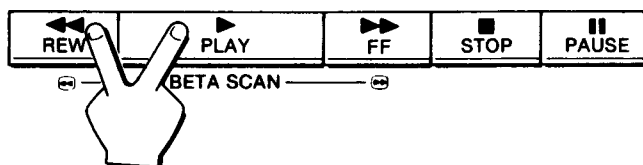
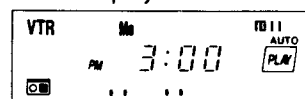
## AUTO PLAY/STOP

**To play a tape back from the beginning of the tape after rewinding**

Set the display to the **clock mode**.

Press **▶ PLAY** while holding **◀◀ REW** depressed. After the tape is completely rewound, it will automatically be played back.

Clock display

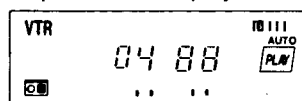


**To play a tape back from the point at which the tape counter has been set to "00 00" after it has been re-wound**

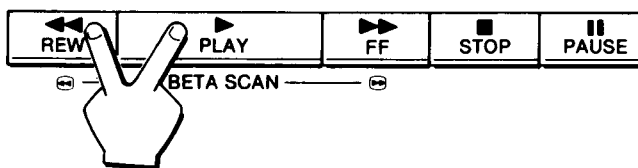
Press **CLOCK/COUNTER** to change the display window to the tape counter. Set the counter to "00 00" by pressing **CLEAR/RESET** at the point at which you wish to begin playback.

Press **▶ PLAY** while holding **◀◀ REW** depressed. The tape will be played back automatically beginning at the "00 00" point in the display window.

Tape counter display

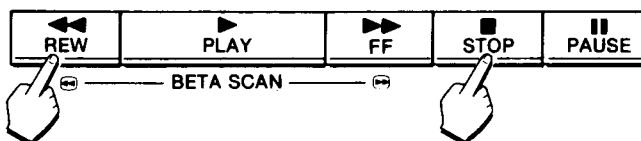


**CLOCK/  
COUNTER** | **CLEAR/  
RESET**



**To stop the tape at the "00 00" point after it has been re-wound**

The same operation as the above except when the tape is rewound, press **■ STOP** while holding **◀◀ REW** depressed.



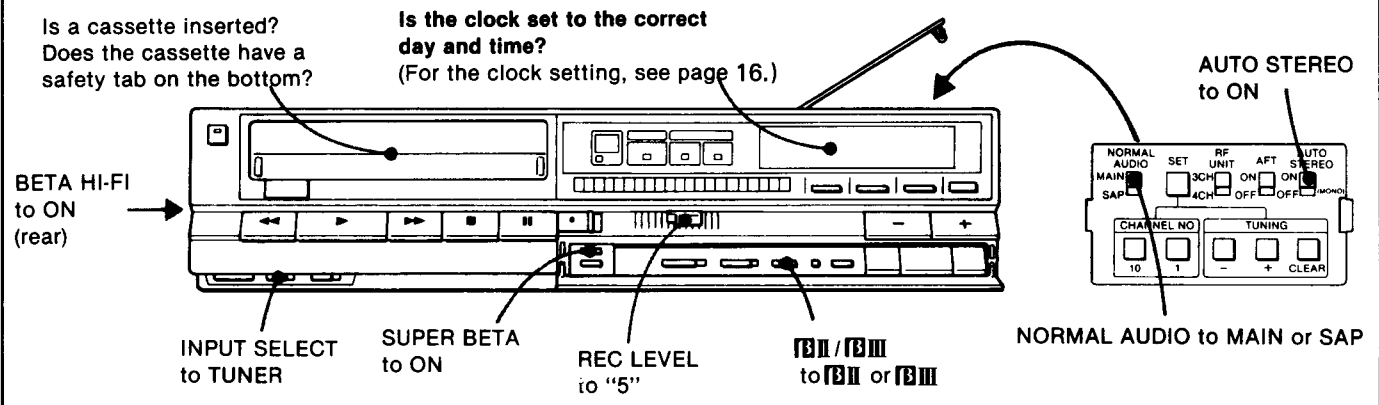
Auto play and stop at the "00 00" point operates only in the tape counter mode.

## 1-10. TIMER-ACTIVATED RECORDING

This timer can only be used to start and stop recording.

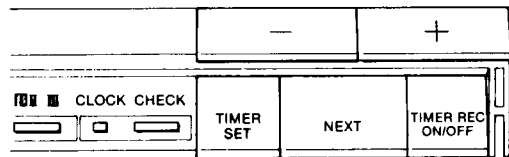
The timer can be set to record up to six different programs on any one day or in any period of seven consecutive days.

### Check before setting the timer



## SETTING THE TIMER

Suppose you want to make a recording of channel 6 from 7:10 to 11:15 on Friday evening.

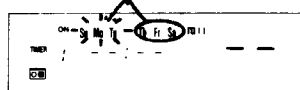


Every time you press NEXT, the item to be preset next flashes. Do not forget to press NEXT, otherwise the presetting process does not advance to the next step. To set the appropriate day, time, and channel, press the + button to advance and the - button to go back.

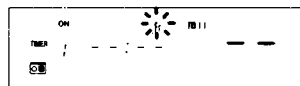
### Check in the window

Flashes alternately

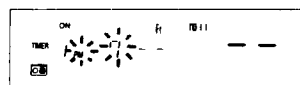
- 1 Press **TIMER SET**.  
The first empty program position will be selected automatically.



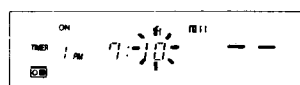
- 2 Set the day with the + or - button.



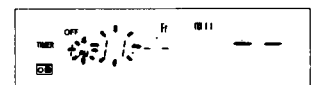
- 3 Press **NEXT**.  
Set the hour with the + or - button.



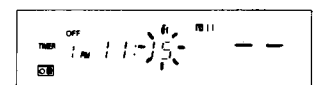
- 4 Press **NEXT**.  
Set the minutes with the + or - button.  
The turn-on time for recording has been preset.



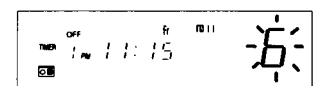
- 5 Press **NEXT**.  
Now, turn-off time must be preset.  
Set the hour with the + or - button.



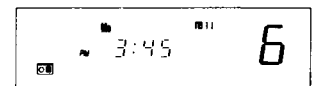
- 6 Press **NEXT**.  
Set the minute with the + or - button.



- 7 Press **NEXT**.  
Set the channel with the + or - button.



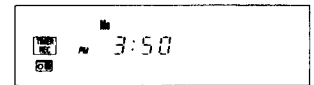
- 8 Press **NEXT**.  
The memorized turn-on and, turn-off times will be displayed for about 3 seconds, then the current timer will appear.



To preset more programs, press **TIMER SET** again to display another empty program position. Repeat all steps above.

When the six programs have been fully preset, the window will continue to show the current time even if **TIMER REC ON/OFF** is pressed. To know what you have preset, press **CHECK**.

- 9 To activate recording mode for the preset time:  
Press **TIMER REC ON/OFF**.



The power will be turned off and the recorder will be in the standby mode.

Recording will start automatically at the preset turn-on time and will stop at the preset turn-off time. The memory of the program except everyday setting will be erased and the program positions preset in the timer will advance one by one.

ONCE THE TIMER REC INDICATOR HAS LIT UP, only the CHECK and TIMER REC ON/OFF functions can be activated.

**To release a timer-activated recording before it starts**  
Press TIMER REC ON/OFF. The memory will be retained. To reactivate the timer recording standby mode, press TIMER REC ON/OFF again.

**To stop timer recording momentarily**

Press II PAUSE.

To resume recording, press the button again within about 8 minutes.

**When the tape ends during timer recording**

The tape stops but the tape will not be rewound to the beginning.

**To record the entire tape**

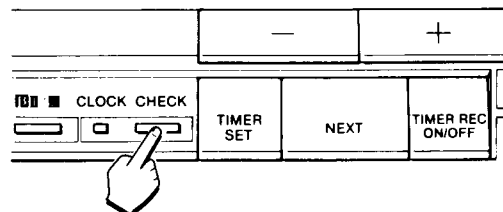
Set the turn-off time to exactly the same time as the turn-on time. Recording will continue to the end of the tape, after which the recorder will be turned off.

**To record a broadcast program at the same time every day**

If you want to make a recording for everyday at the same time on the same channel for the same duration, set the indicator so that all days of week appear.

## TO CHECK THE TIMER SETTING

Press CHECK. Every time you press CHECK, successive preset timer settings will be displayed.

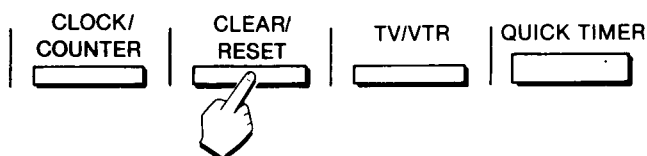


## TO CHANGE A TIMER SETTING

- 1 Press CHECK until the setting to be changed appears.
- 2 Press TIMER SET.
- 3 Press NEXT until the setting to be changed blinks.
- 4 Change the setting with the + or - button.
- 5 Press NEXT until the current time appears.

## TO ERASE THE MEMORY OF A PARTICULAR PROGRAM POSITION

Press CHECK until the setting to be erased appears and press CLEAR/RESET. The memory of the program will be erased.



## NOTES ON TIMER RECORDING

### Troubles when TIMER REC is pressed

TIMER REC and  indications blink in the window and the cassette will be ejected automatically.

### Check

➡ The cassette inserted has the safety tab removed.

TIMER REC and  indications blink in the window for a few seconds and disappears.

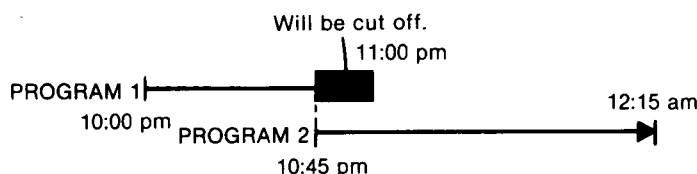
➡ The tape is at its end.

TIMER REC does not appear in the window.

➡ No cassette is inserted.

### When the presets of your timer-activated recordings overlap

There will be no error indication to inform you of the overlap. Even if there is an overlap, a recording will be made.



The recording of program 2 will begin before program 1 is finished.

### If a power interruption occurs during timer recording

#### If the clock shows "AM 12:00" and blinks

When the recorder is in the standby mode, all the timer settings have been erased. Reset the clock and timer setting.

When the timer-recording is activated, the recording will stop.

#### If the clock goes slow

An interruption of less than a few seconds will not affect the memory of the timer.

The timer memory will be retained and timer recording will be performed although the clock remains as it goes slow by the amount of the interruption.

## 1-11. QUICK TIMER RECORDING

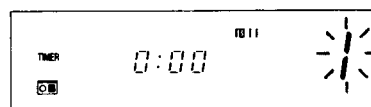
Use this function to begin recording a program immediately and to turn off the power automatically. You can start timer recording immediately by pressing QUICK TIMER for up to 5 hours by 30 minutes. You can also use this function to extend the non-timer recording of a particular channel.

### TO USE QUICK TIMER FROM THE TAPE STOP MODE

**Make sure that the cassette is inserted.**

1 Press QUICK TIMER.

While the channel number blinks, you can change the channel. If you do not advance to the next step, the recorder will turn off after about 30 seconds.



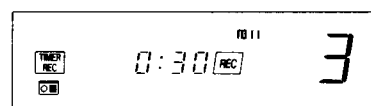
2 Press QUICK TIMER again.

The recording will start instantly.

Choose the recording duration.

Every time you press QUICK TIMER, the indication changes:

0:30→1:00→1:30→2:00.....5:00→0:00



When the recording starts, the time indication decreases minute by minute to 0:00 and the recorder turns off automatically.

### TO USE QUICK TIMER WHILE RECORDING

Press QUICK TIMER as many times as required to choose recording duration. Recording will continue within the selected time duration.

#### Once the quick timer recording has started

No function button except for the following will activate:

QUICK TIMER.....to change recording duration

TIMER REC.....to interrupt quick timer recording

PAUSE.....to stop quick timer recording momentarily

CHECK.....to check timer programs preset

#### When a power interruption occurs during quick timer recording

The recording stops.

It will start again if the power is supplied within few seconds.

#### When the tape comes to an end before the preset turn-off time

The recording stops and the recorder will be automatically turned off after about 30 seconds.

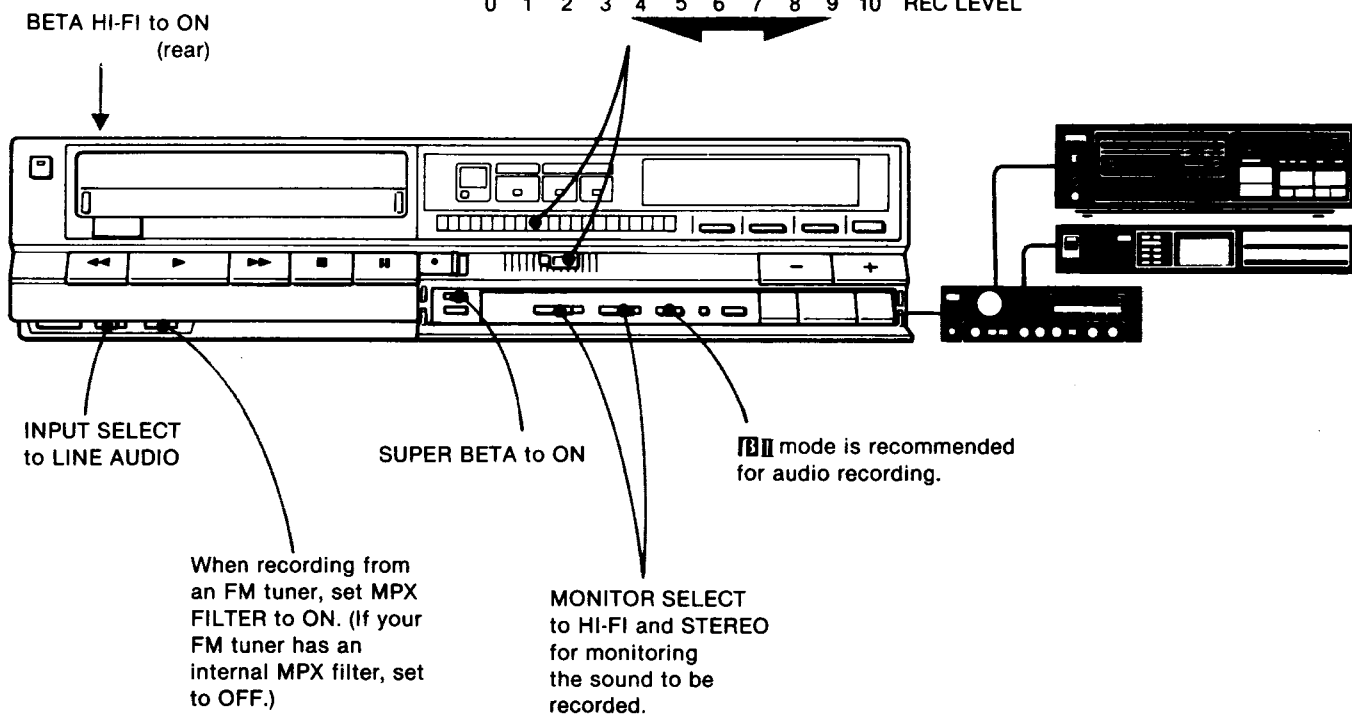
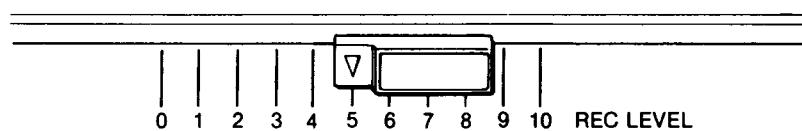
## 1-12. BETA HI-FI AUDIO RECORDING

### RECORDING FROM YOUR AUDIO SYSTEM

To connect the recorder to your audio system.

Set the switches as shown below. To start recording, insert a cassette and slide REC to the right.

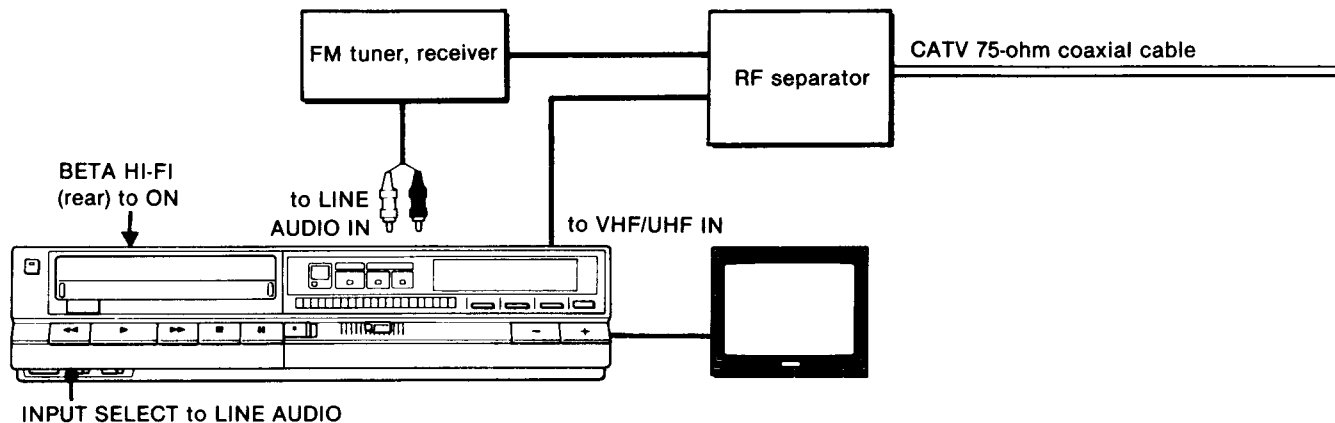
Manually adjust the recording level.  
Set REC LEVEL so that the first  
red element lights up only at  
the highest signal level.



## FM SIMULCAST RECORDING

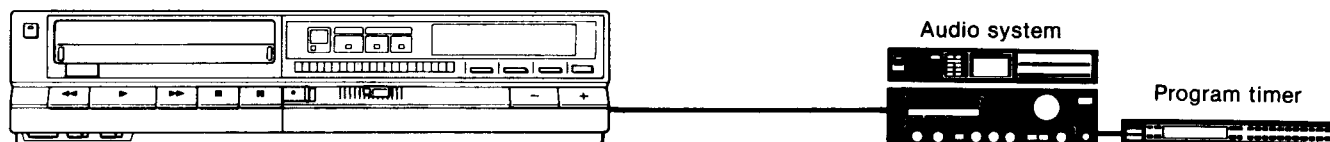
By connecting an FM stereo tuner to the LINE AUDIO IN jacks besides the CATV cable connection, you can record a CATV program with stereo sound, such as MTV (music TV), whose audio signals are divided into the FM tuner from the cable.

For FM simulcast recording, set INPUT SELECT to **LINE AUDIO**. The sound from the FM tuner is recorded on the video track (Beta hi-fi recording), while the TV sound is recorded on the conventional audio track.



## TIMER-ACTIVATED FM RECORDING

Use an optional program timer to turn the audio system on and off.

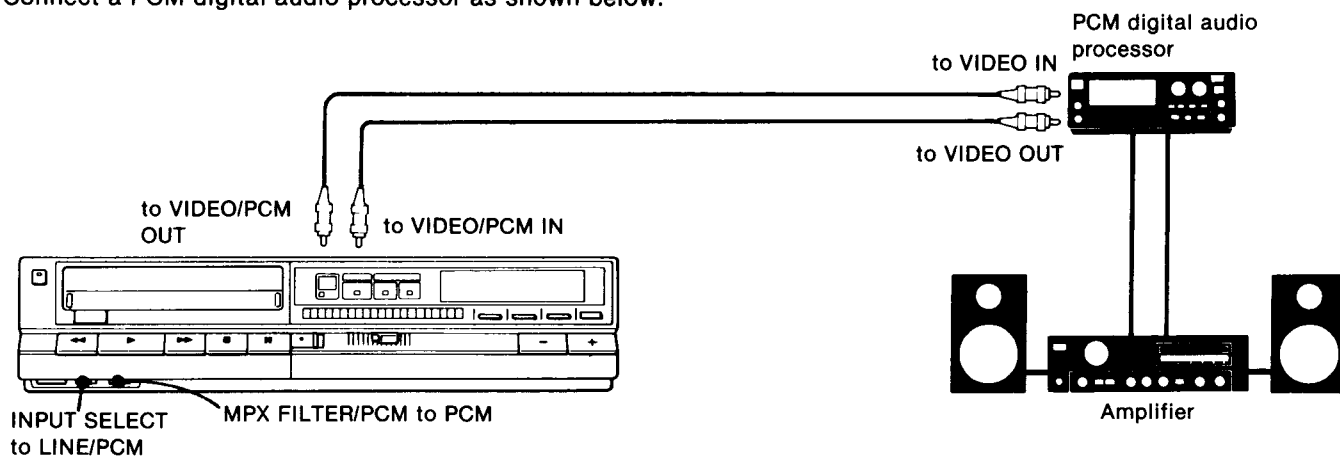


The settings of the controls is the same as in "RECORDING FROM YOUR AUDIO SYSTEM". Set the recorder's timer and a program timer to the

same turn-on and turn-off time. The settings on the recorder's timer are the same as in "TIMER-ACTIVATED RECORDING" on page 22.

## 1-13. PCM RECORDING AND PLAYBACK

Connect a PCM digital audio processor as shown below.



For PCM recording, set INPUT SELECT to **LINE/PCM** and MPX FILTER/PCM to **PCM**. For optimum results, use a video cassette with a model number of L-500 or

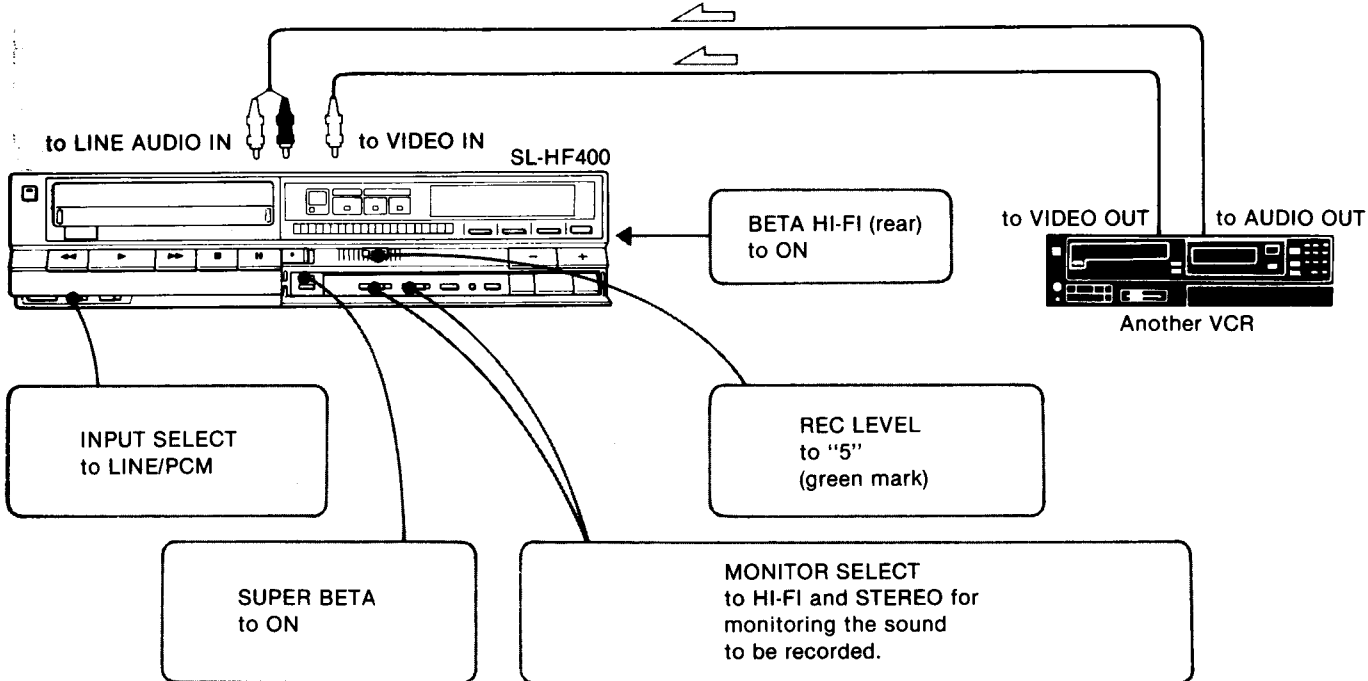
below (L-250, L-125, etc.) and select tape speed **180**. For details, refer to the instruction manual furnished with the digital audio processor.

## 1-14. EDITING A TAPE

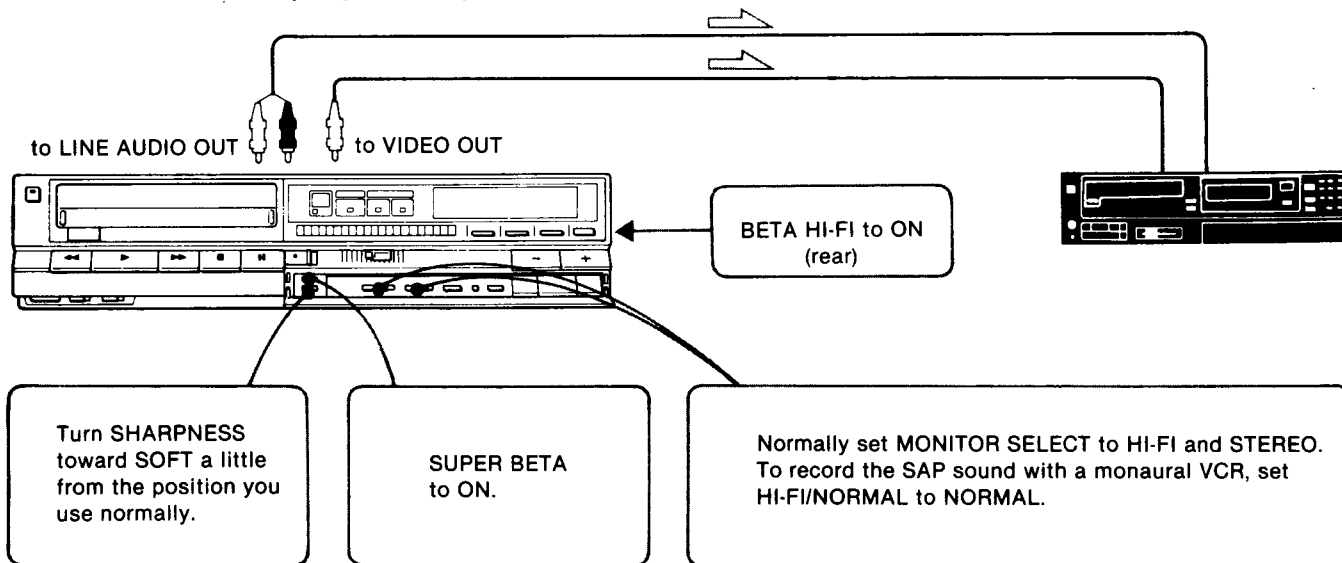
To edit a home movie tape, you will need two video cassette recorders.

Set the controls as shown below. To start recording, set the VCR for playback in the playback mode, then press the record button on the other VCR.

**To edit a home movie tape from another VCR to the SL-HF400**



**To edit a home movie tape by recording a tape played back on the SL-HF400 to another VCR**



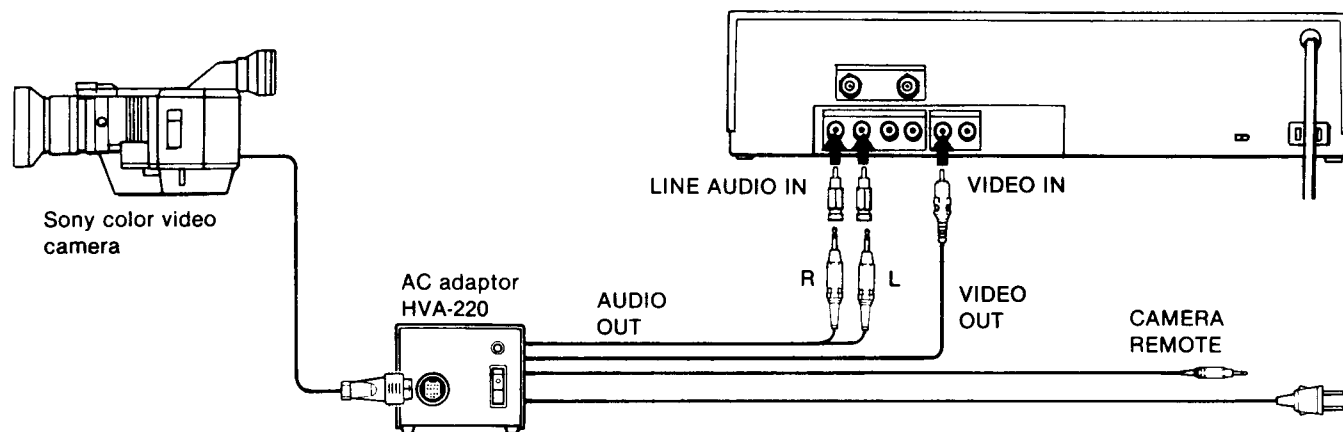
### CAUTION

Television programs, films, video tapes and other materials may be copyrighted. Unauthorized duplication of such material may be contrary to the provisions of the copyright laws.

## 1-15. CAMERA RECORDING

### CONNECTIONS

- The camera must conform to American TV (EIA) standards.
- The use of a Sony HVA-220 ac adaptor is required.



### OPERATION

Set INPUT on the recorder to LINE/PCM.

To start recording, slide REC on the recorder or on the Remote Commander to the right.

To stop recording, press ■ STOP on the recorder or on the Remote Commander.

To stop recording momentarily, press ■ PAUSE on the recorder or on the Commander.

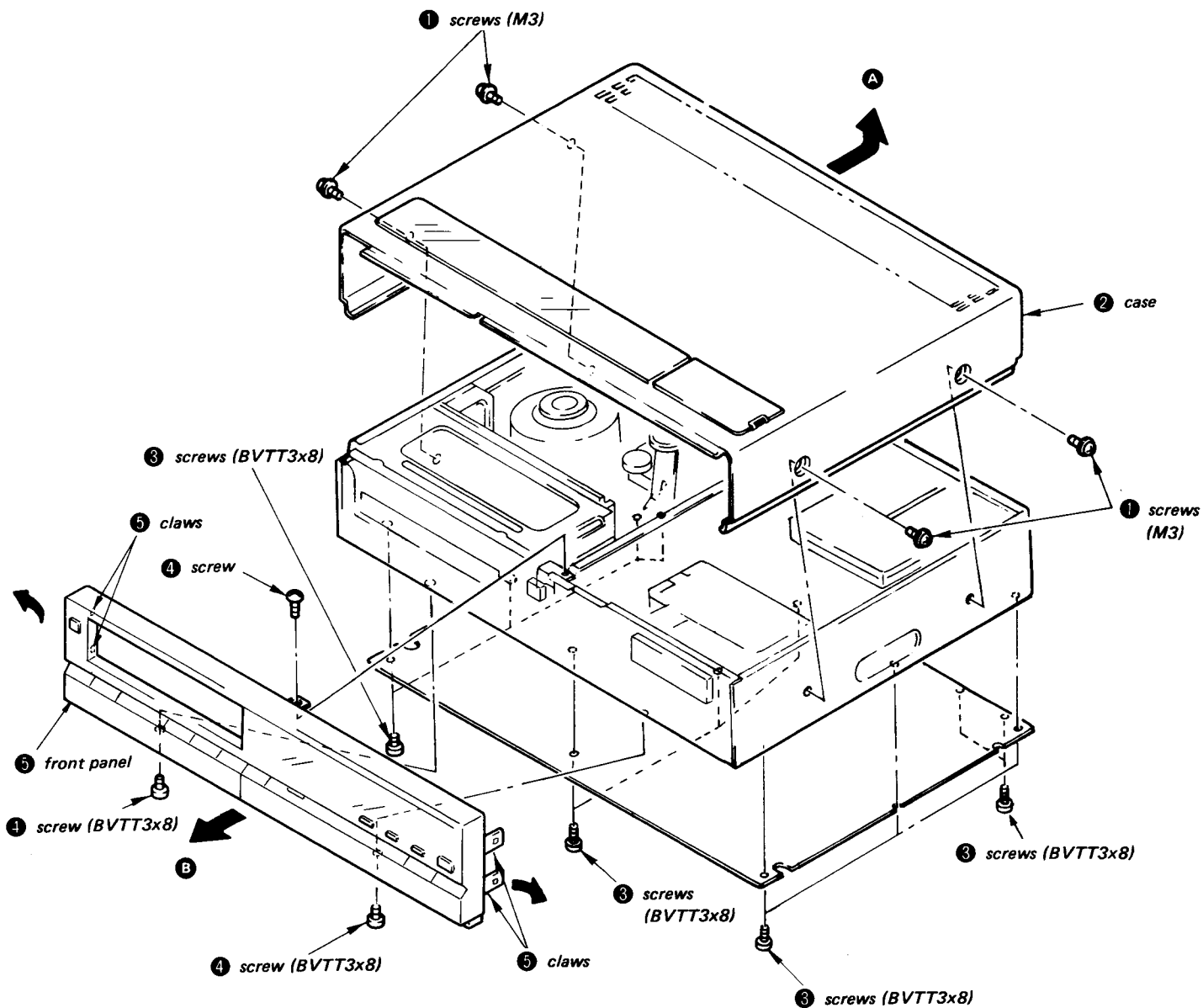
The tape run/stop button on your camera will not function with this recorder.



## SECTION 2 DISASSEMBLY

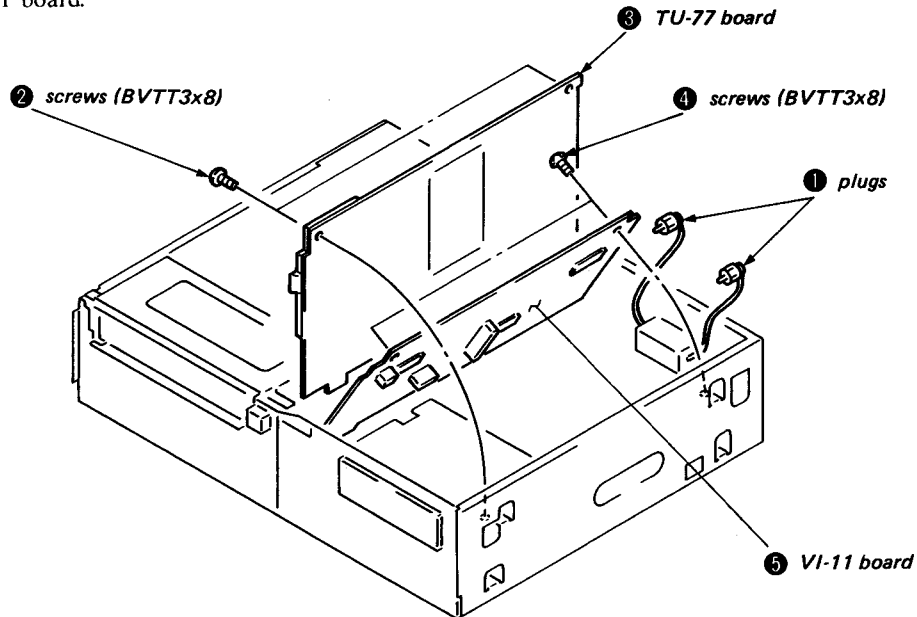
### 2-1. DISASSEMBLY OF CABINET

- ① Remove the four case set screws.
- ② Remove the upper case in the direction indicated by the arrow **A**.
- ③ Remove the twelve screws BVTT3×8), then remove the lower case.
- ④ Remove the three screws (BVTT3×8).
- ⑤ Remove the front panel in the direction indicated by the arrow **B**.



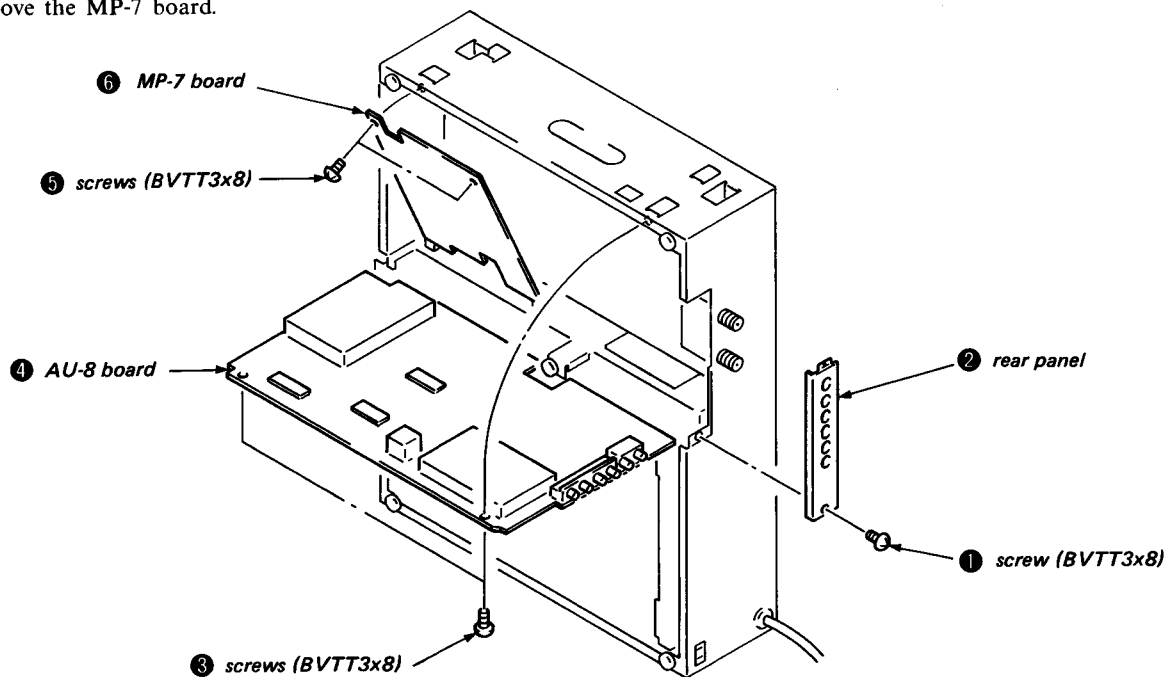
## 2-2. REMOVAL OF THE TU-77 BOARD AND VI-11 BOARD

- ① Pull out the two plugs.
- ② Remove the two screws (BVTT3×8).
- ③ Remove the TU-77 board.
- ④ Remove the two screws (BVTT3×8).
- ⑤ Remove the VI-11 board.



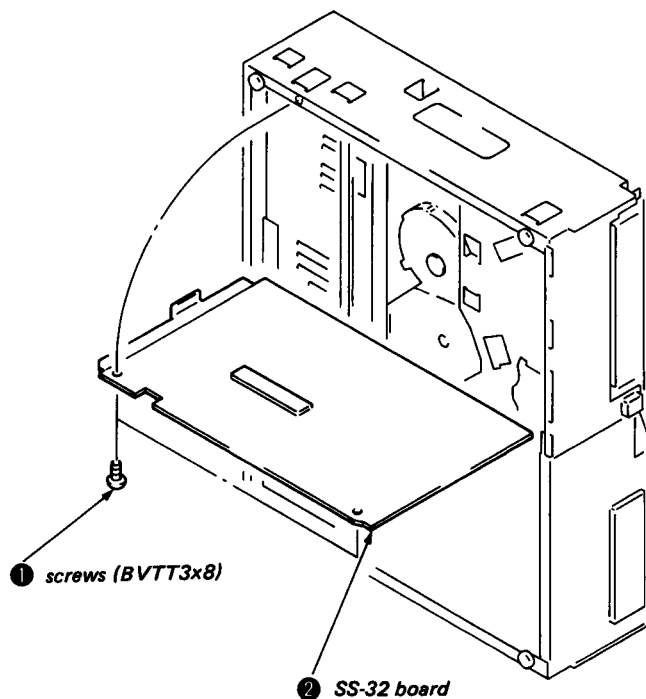
## 2-3. REMOVAL OF THE AU-8 BOARD AND MP-7 BOARD

- ① Remove the screw (BVTT3×8).
- ② Remove the rear panel.
- ③ Remove the two screws (BVTT3×8).
- ④ Remove the AU-8 board.
- ⑤ Remove the two screws (BVTT3×8).
- ⑥ Remove the MP-7 board.



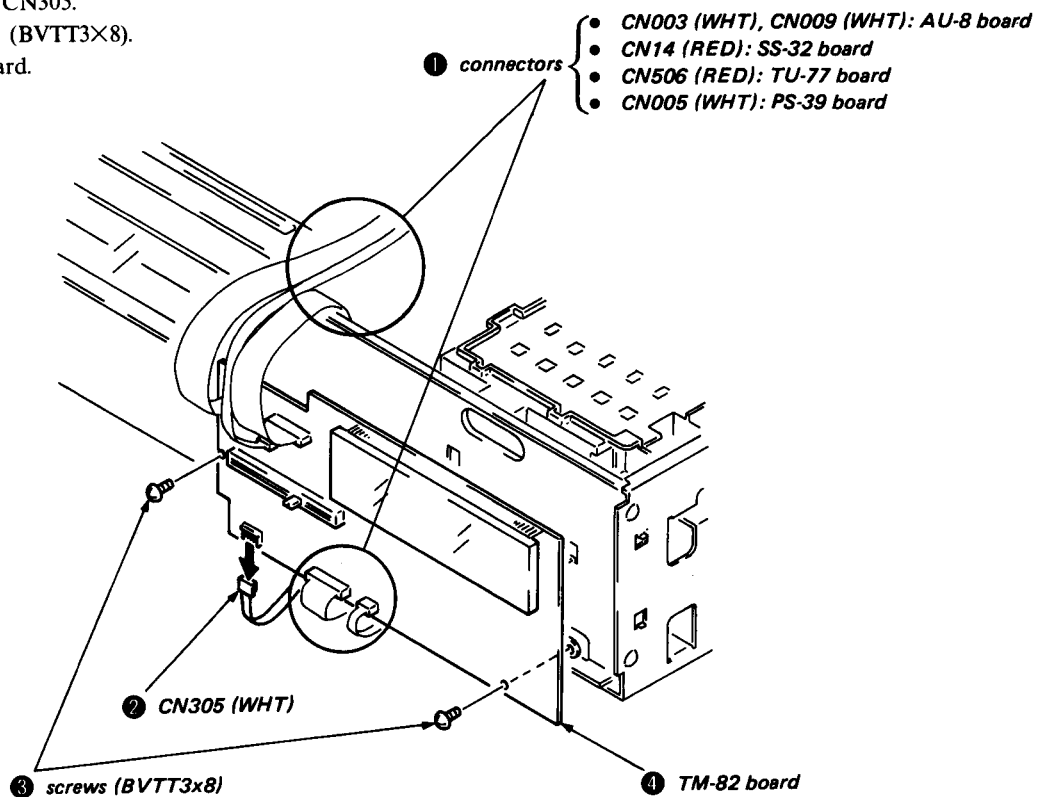
#### 2-4. REMOVAL OF THE SS-32 BOARD

- ① Remove the two screws (BVTT3×8).
- ② Remove the SS-32 board.



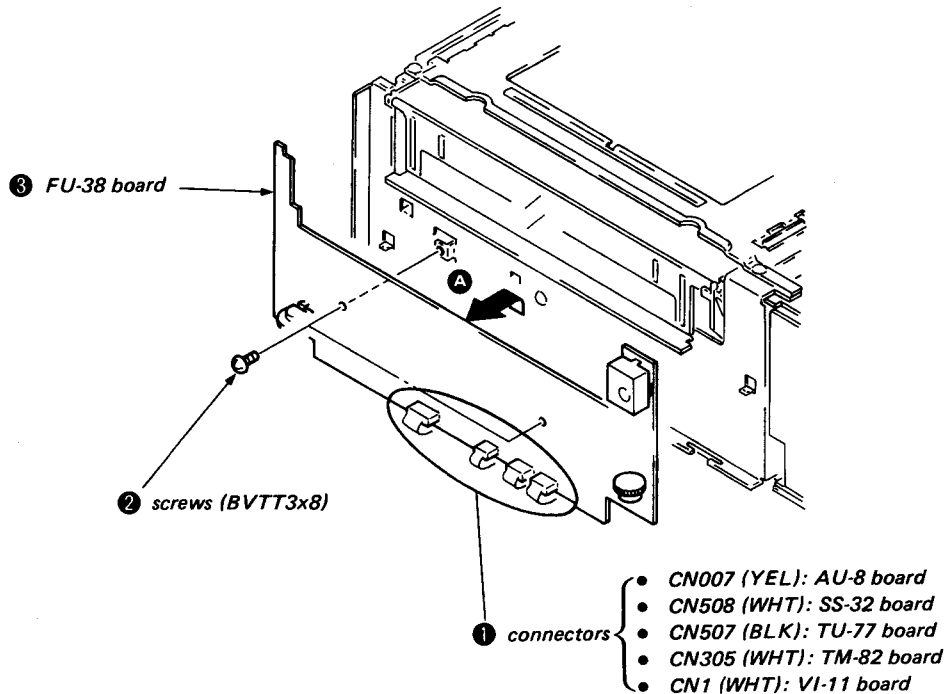
#### 2-5. REMOVAL OF THE TM-82 BOARD

- ① Pull out the five connectors.
- ② Pull out the connector CN305.
- ③ Remove the two screws (BVTT3×8).
- ④ Remove the TM-82 board.



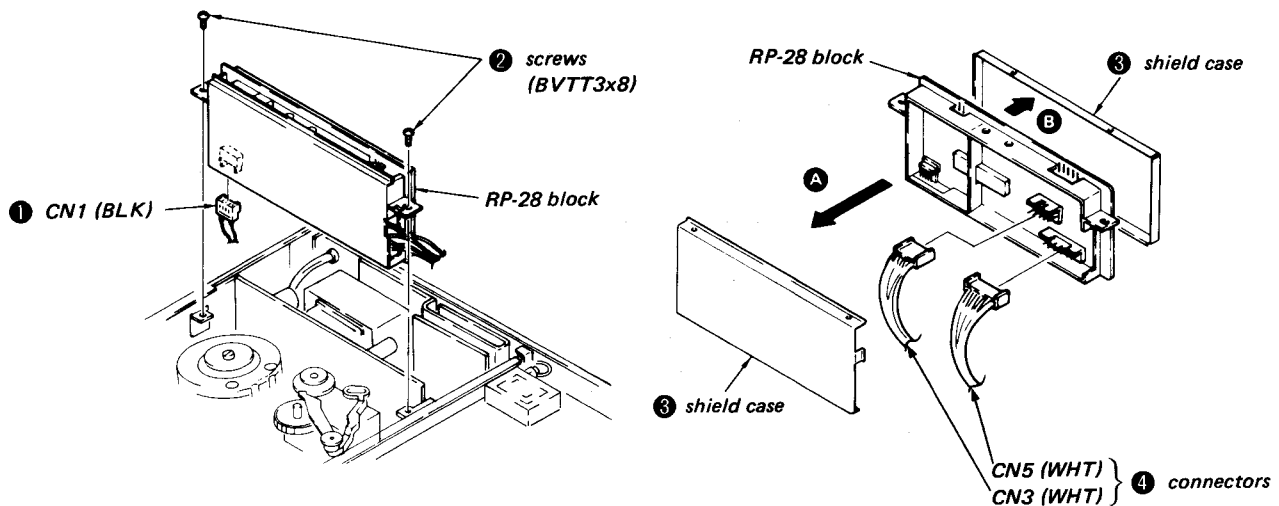
## 2-6. REMOVAL OF THE FU-38 BOARD

- ① Pull out the five connectors.
- ② Remove the two screws (BVTT3×8).
- ③ Remove the FU-38 board in the direction indicated by the arrow **A**.



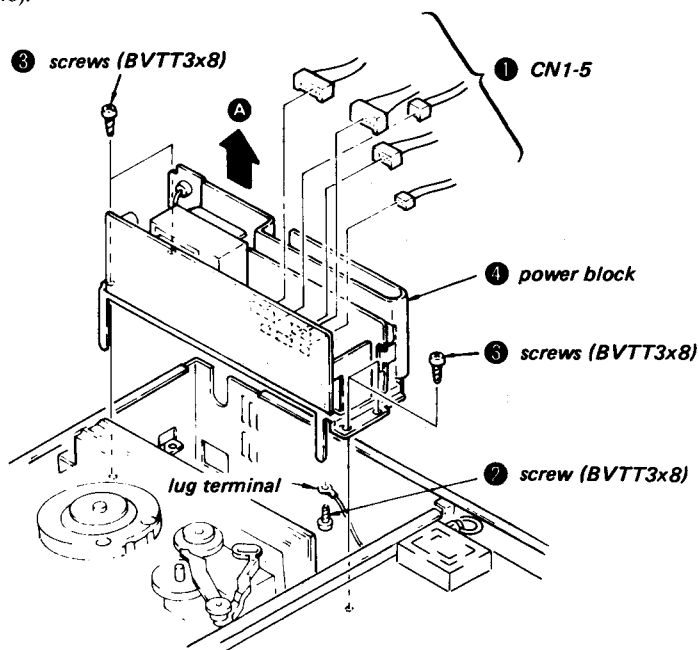
## 2-7. REMOVAL OF THE RP-28 BOARD

- ① Pull out the connector CN1.
- ② Remove the two screws (BVTT3×8).
- ③ Remove the two shield cases in the direction indicated by the arrows **A** and **B**.
- ④ Pull out the two connectors (CN3, CN5).



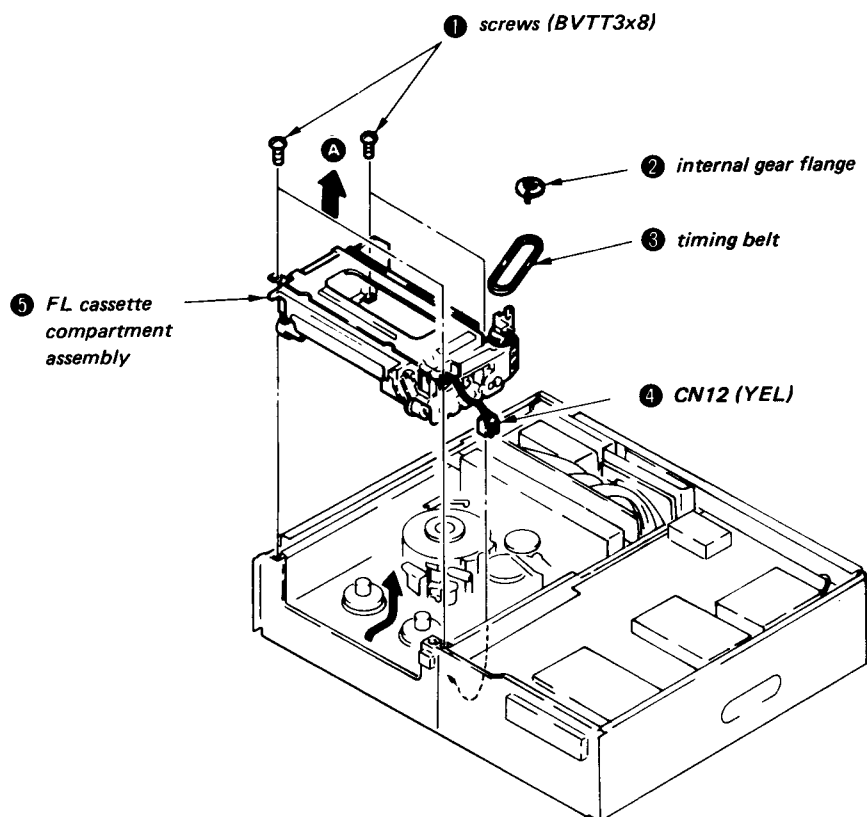
## 2-8. REMOVAL OF THE POWER BLOCK

- ① Remove the five connectors (CN1-CN5).
- ② Remove the screw (BVTT3x8) and lug terminal.
- ③ Remove the four screws (BVTT3x8).
- ④ Remove the POWER block in the direction indicated by the arrow **A**.



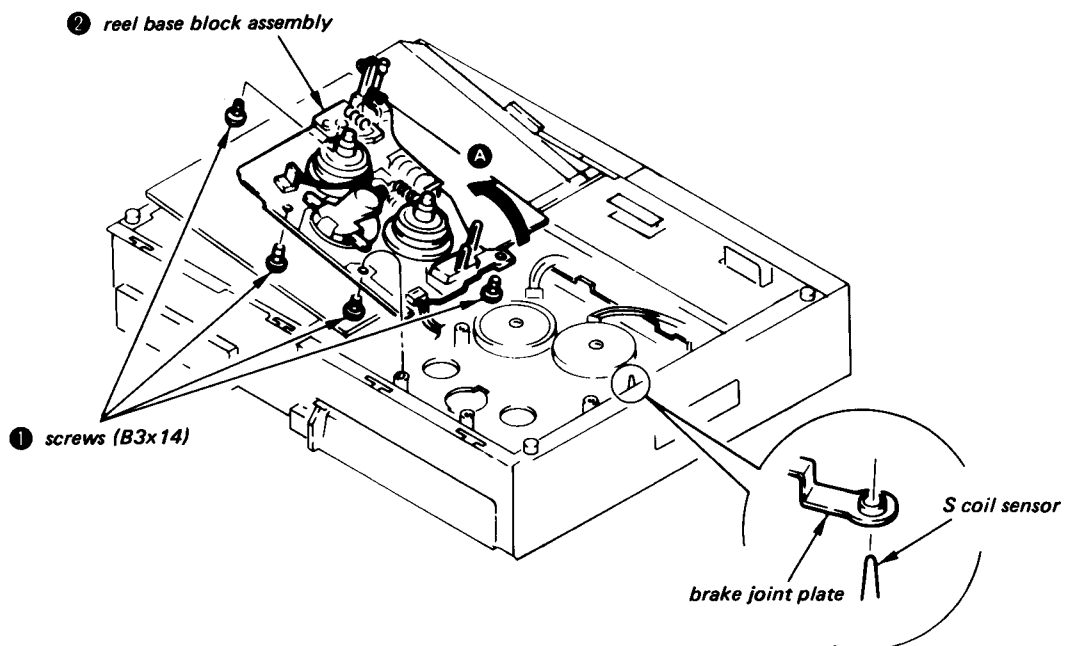
## 2-9. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY

- ① Remove the four screws (BVTT3x8).
- ② Remove the internal gear flange.
- ③ Remove the timing belt.
- ④ Pull out the connector (CN12) from the SS-32 board.
- ⑤ FL cassette compartment assembly in the direction indicated by the arrow **A**.



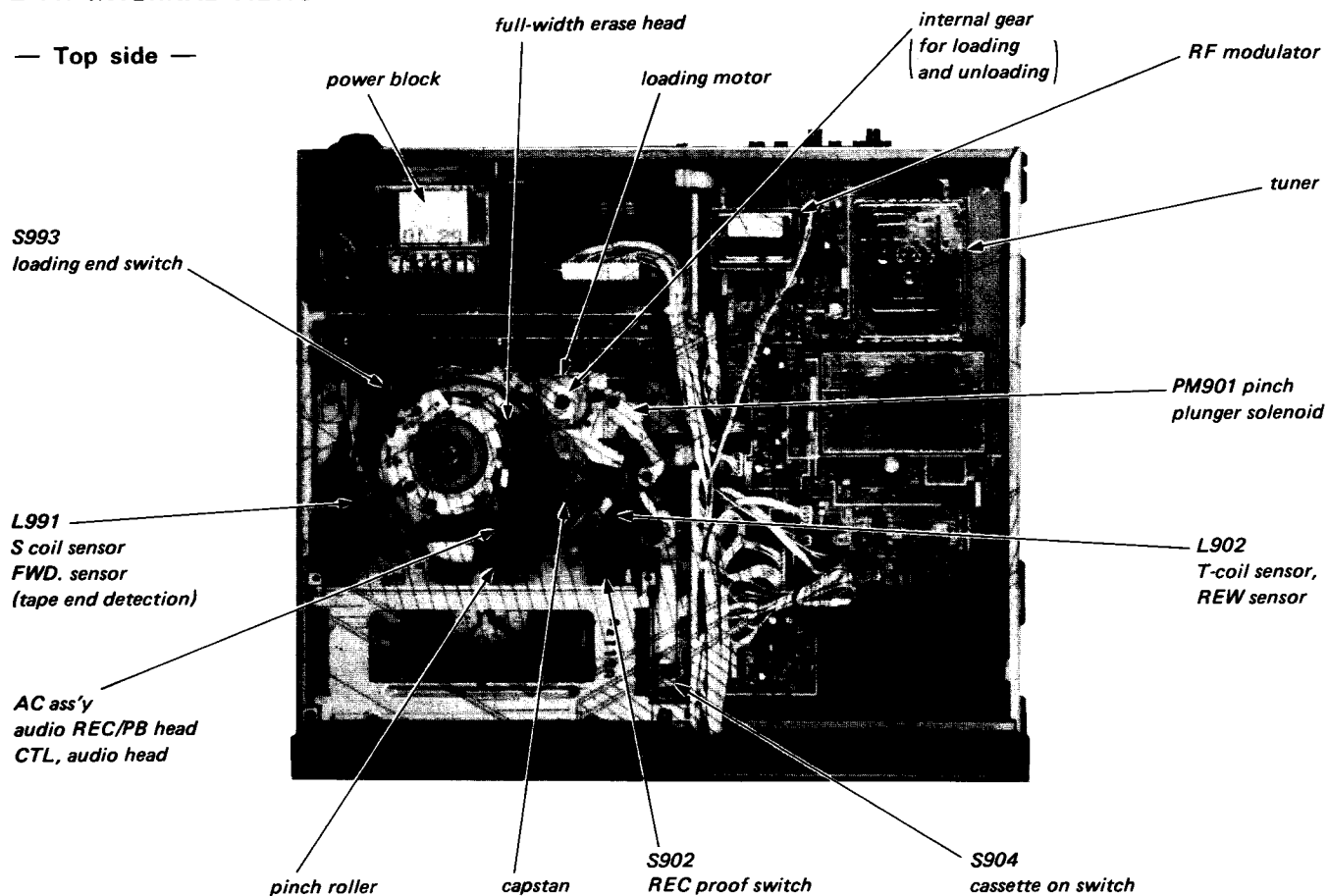
## 2-10. REMOVAL OF THE REEL BASE BLOCK ASSEMBLY

- ① Remove the four screws (B3×14).
- ② Remove the reel base block assembly in the direction indicated by the arrow **A**.

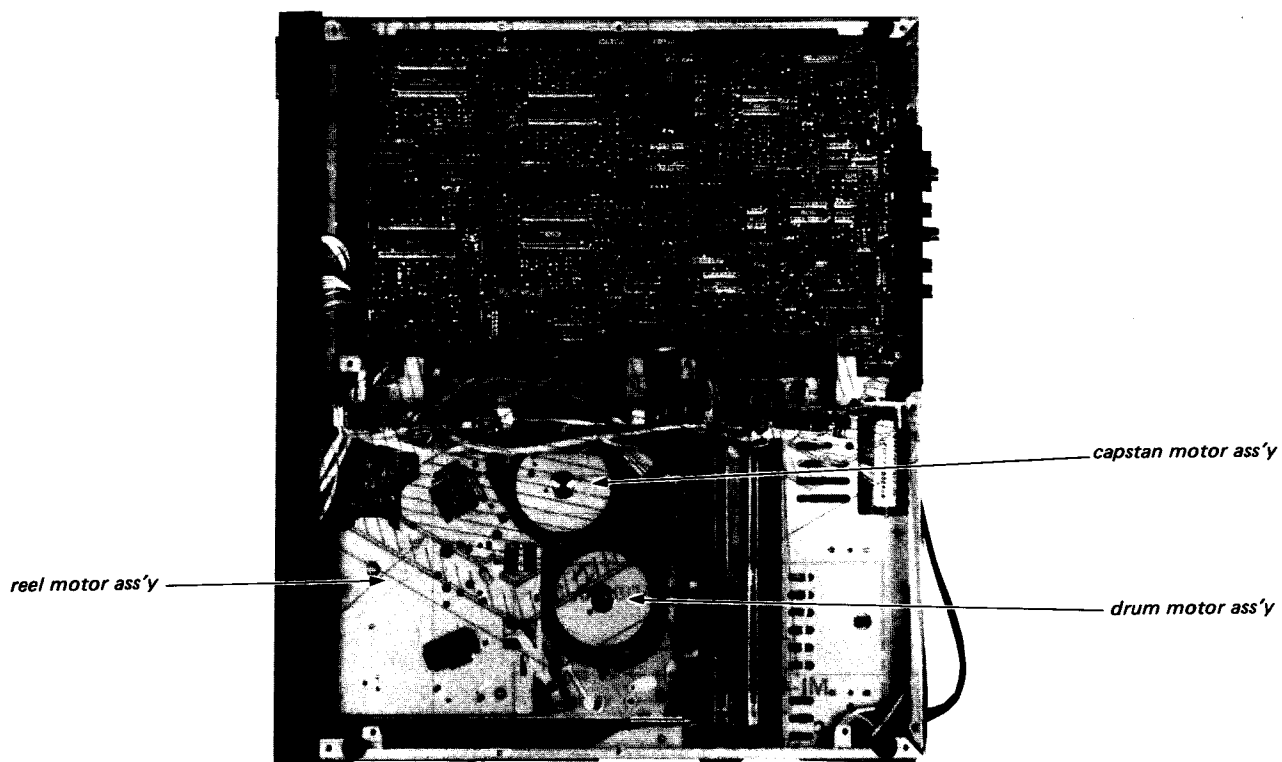


## 2-11. INTERNAL VIEWS

— Top side —

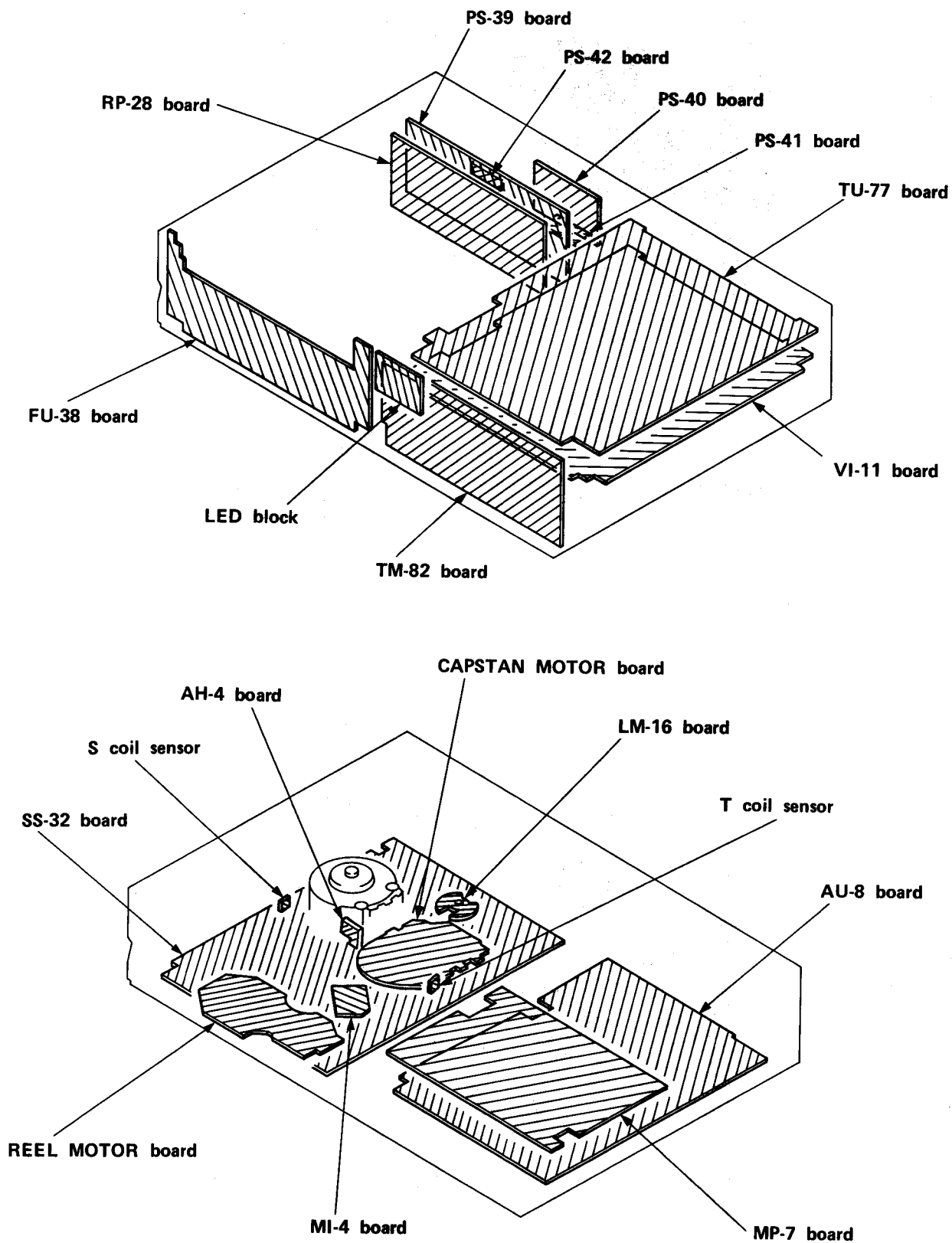


— Bottom side —



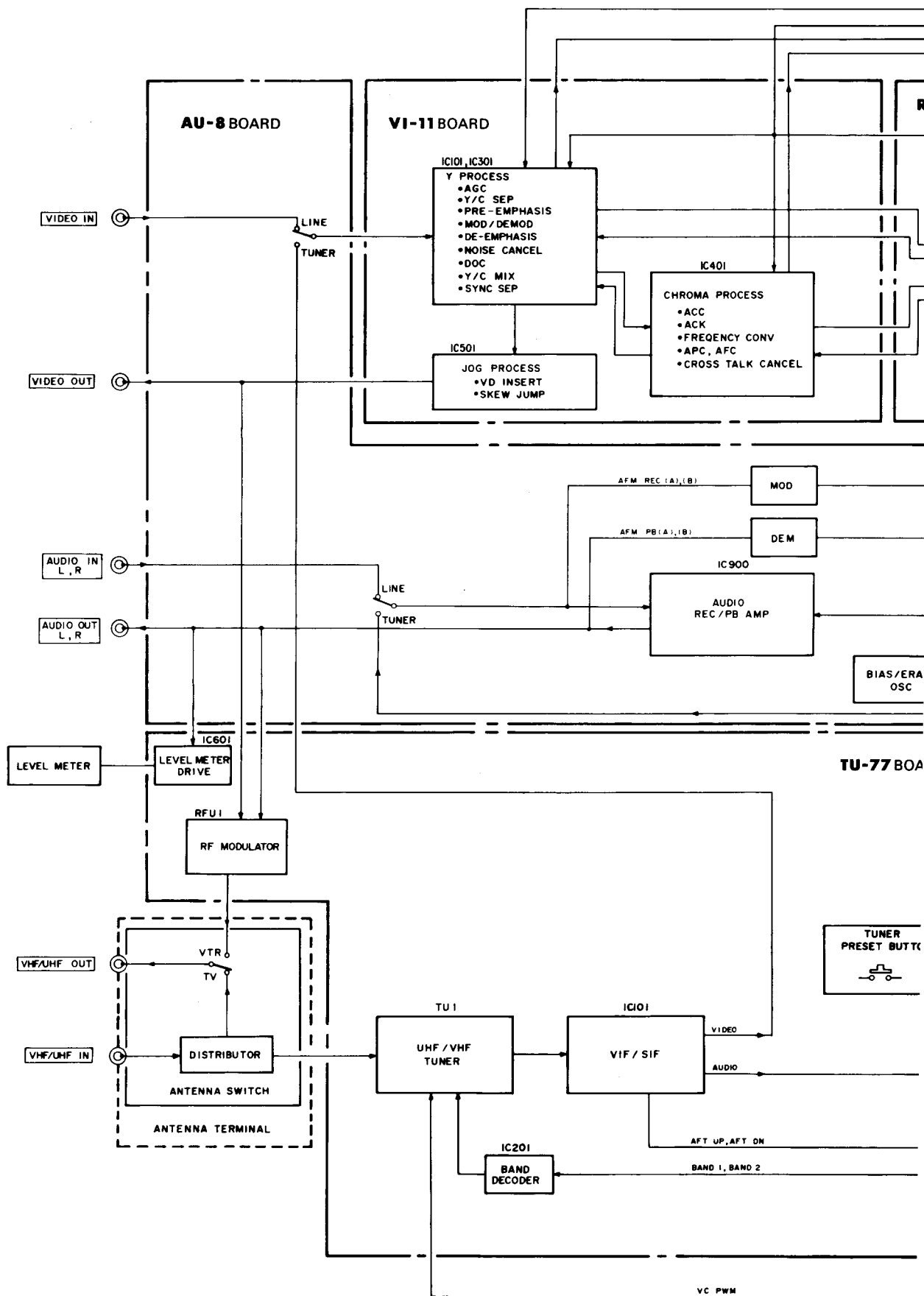
## SECTION 3 DIAGRAMS

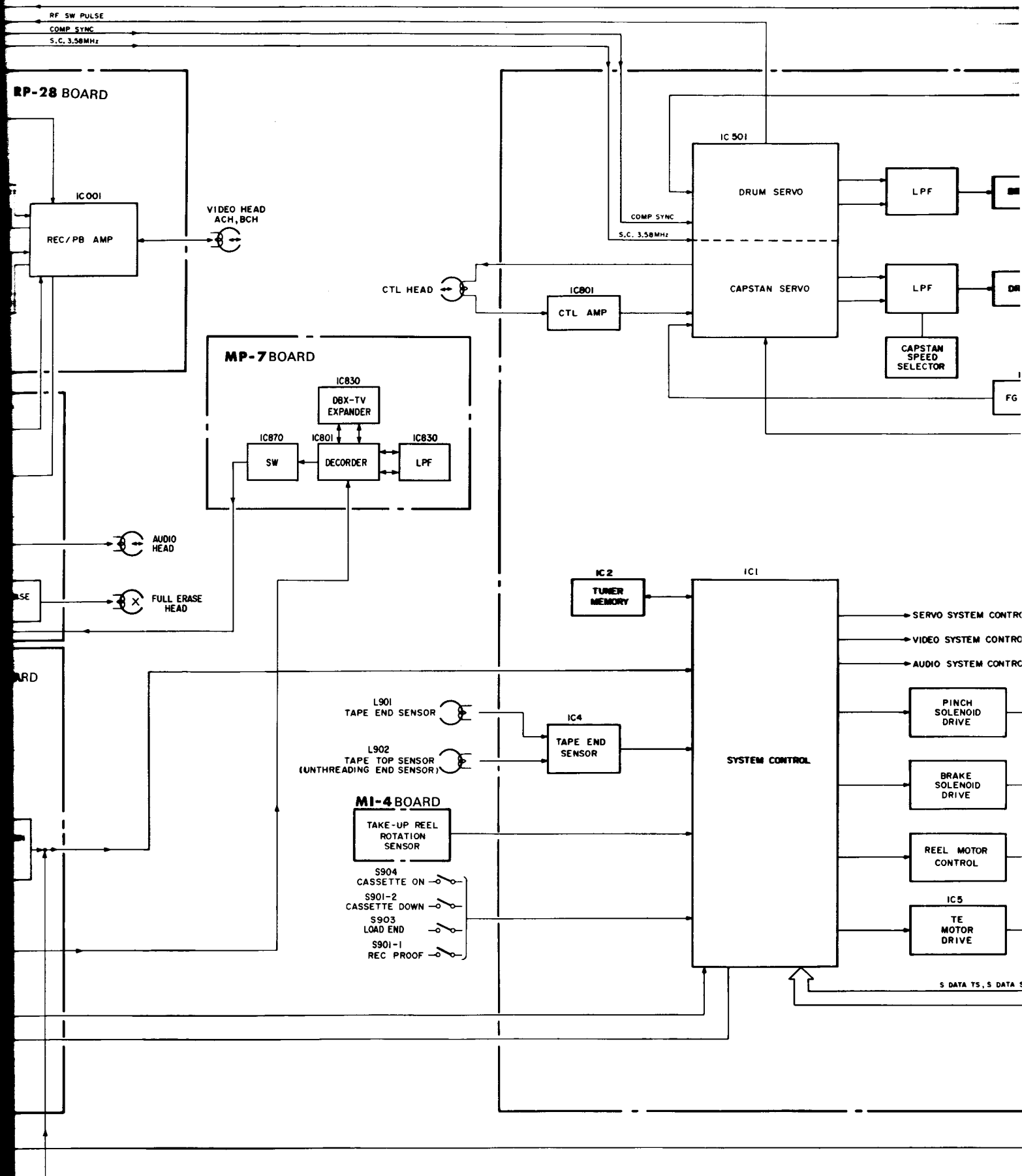
### 3-1. CIRCUIT BOARDS LOCATION

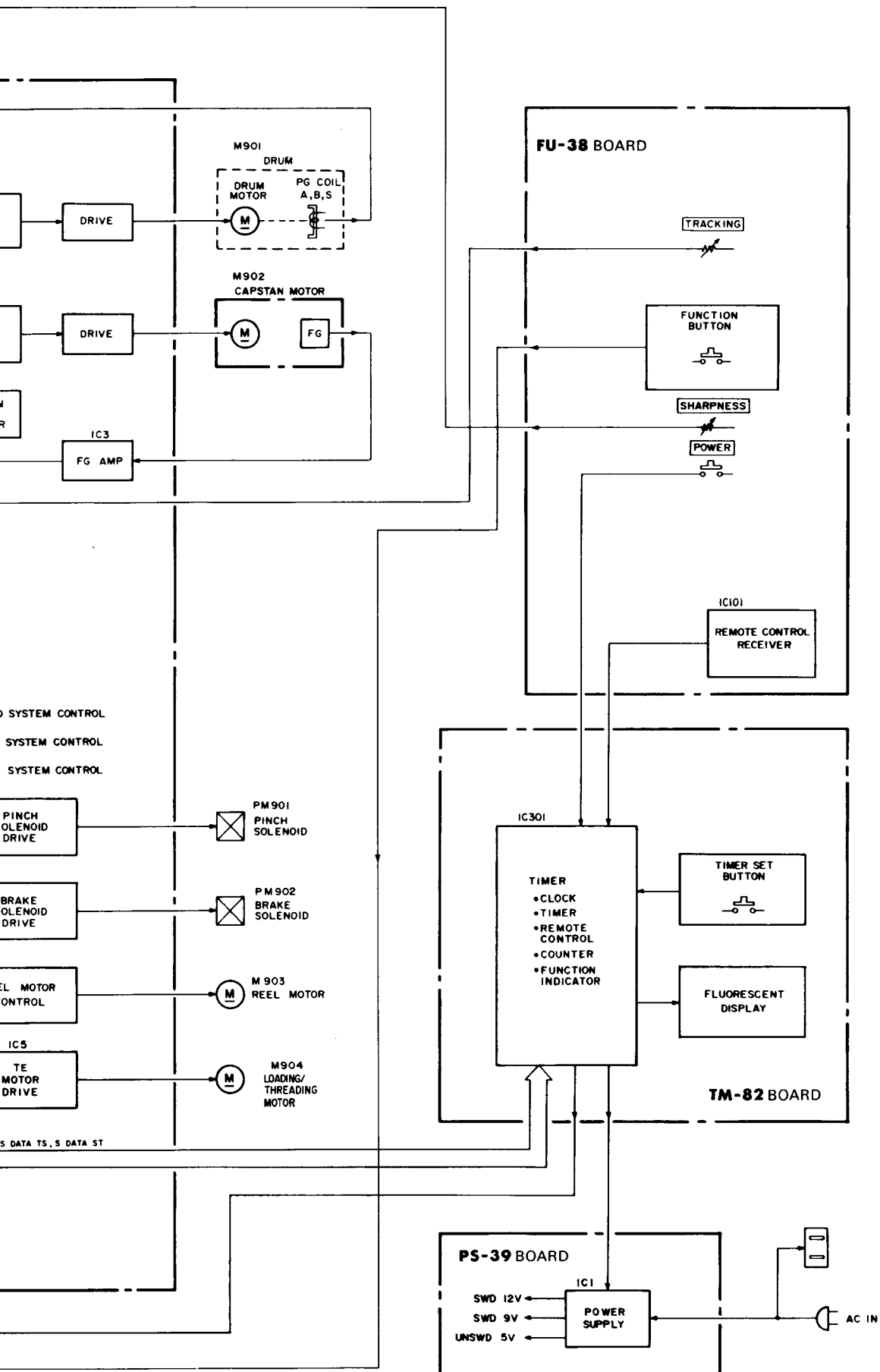




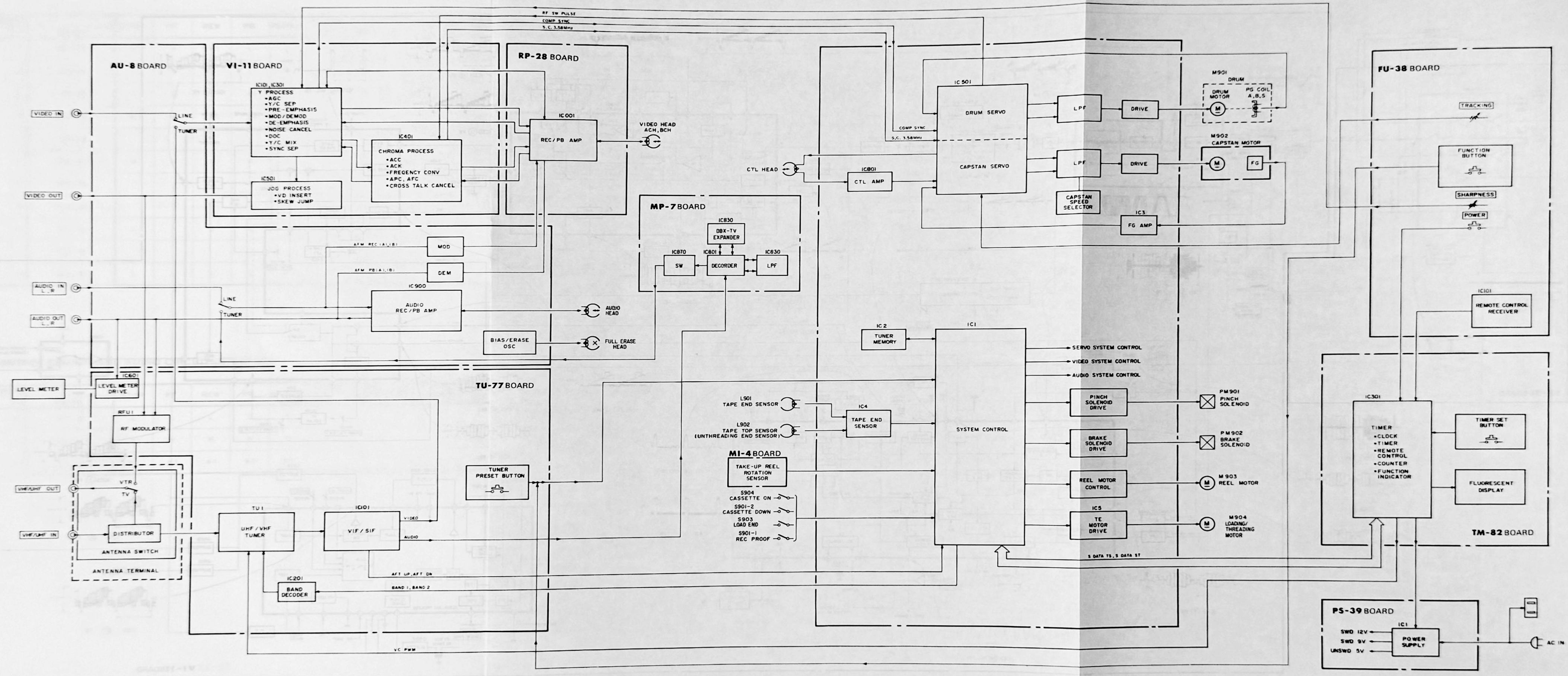
### 3-2. OVERALL BLOCK DIAGRAM



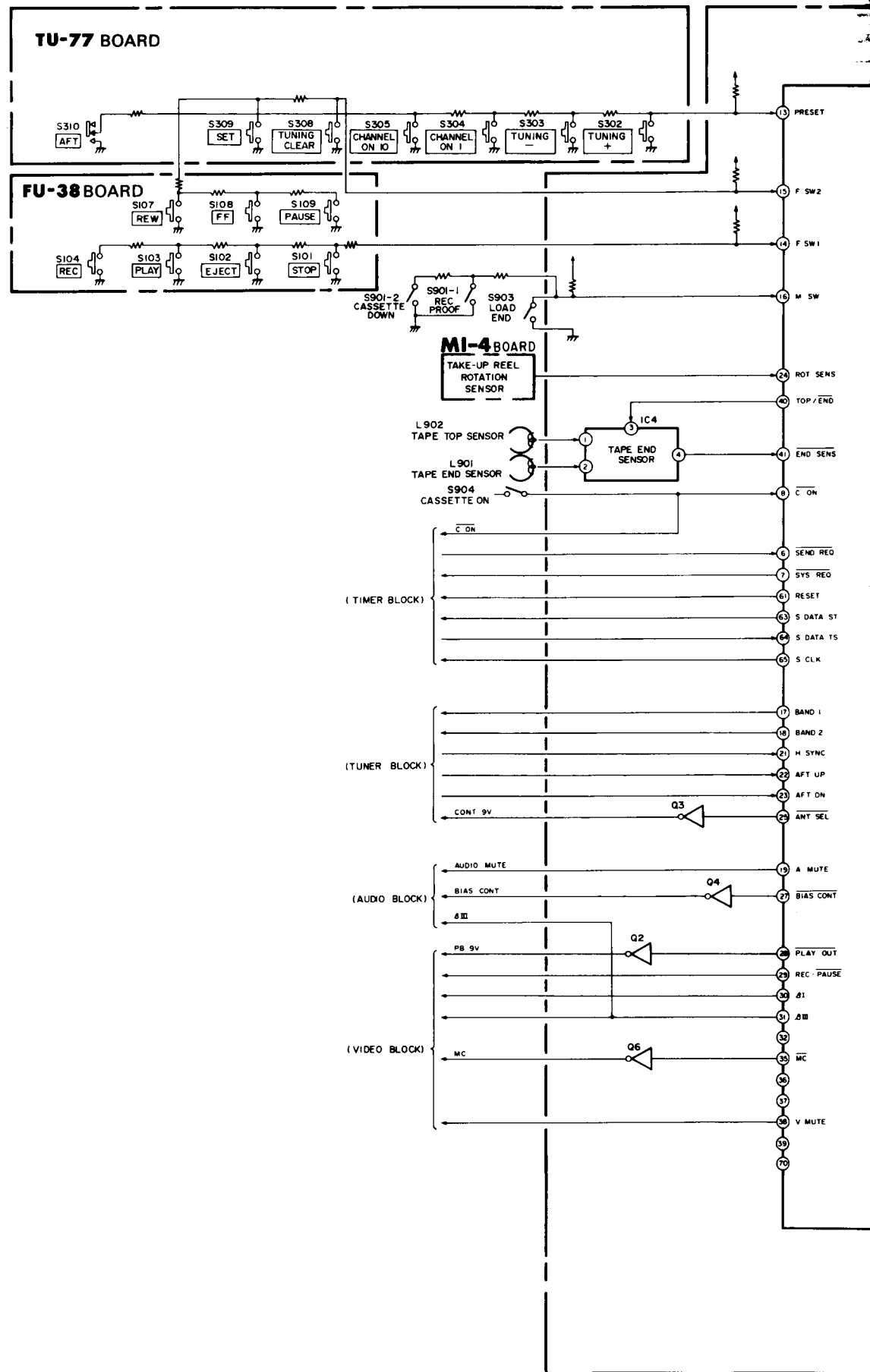


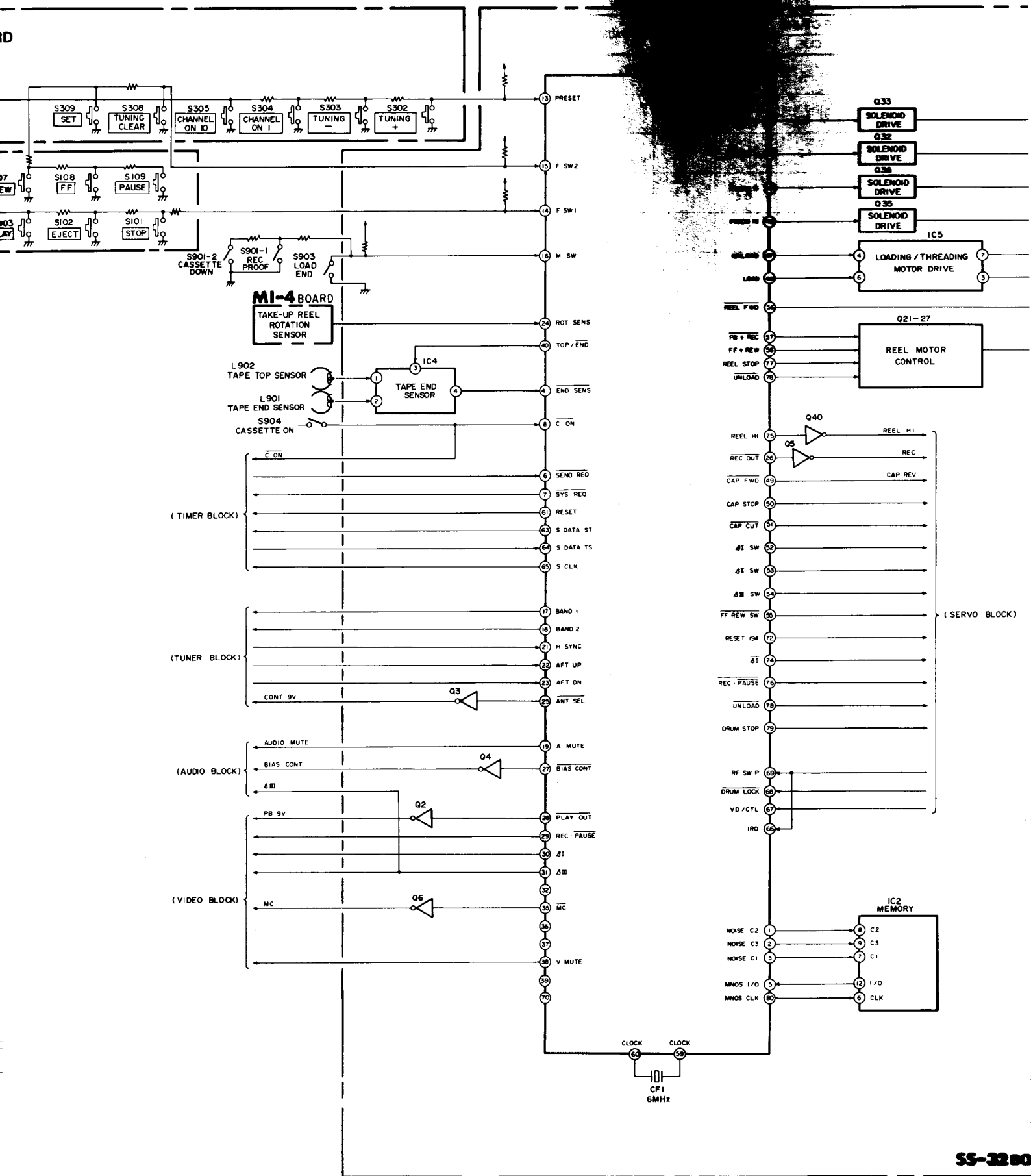


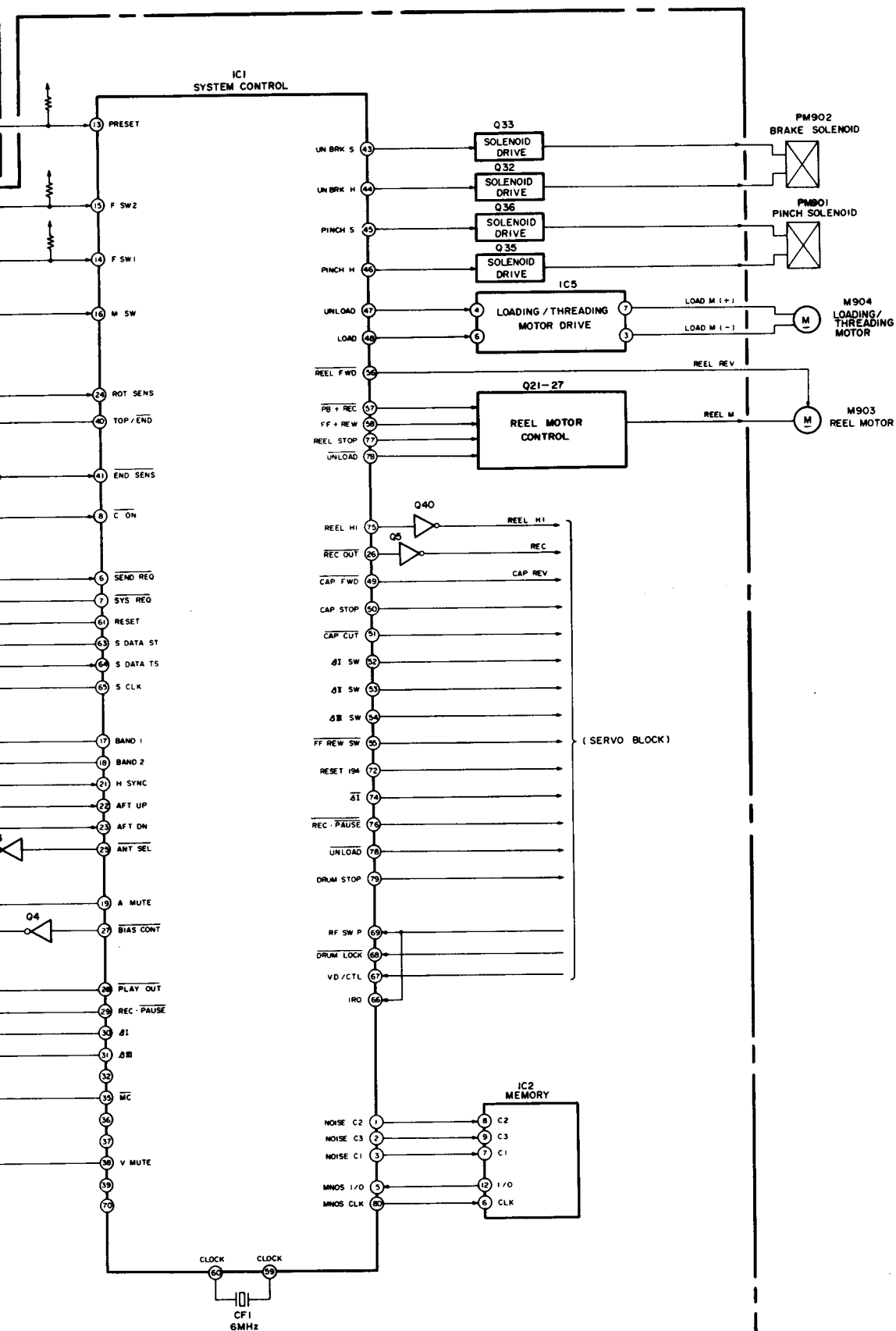
3-2. OVERALL BLOCK DIAGRAM



### 3-4. SYSTEM CONTROL BLOCK DIAGRAM







SS-32 BOARD

### 3-5. SYSTEM CONTROL CIRCUIT AND VIDEO BLOCK INTERFACE

| SIGNAL              | MODE |         | STOP | FF | REW | PB | PB-PAUSE | PICTURE SEARCH |     | REC | REC-PAUSE | TIMER REC |
|---------------------|------|---------|------|----|-----|----|----------|----------------|-----|-----|-----------|-----------|
|                     | I/O  | PIN No. |      |    |     |    |          | CUE            | REV |     |           |           |
| PLAY OUT            | O    | IC1- 28 | H    | H  | H   | L  | L        | L              | L   | H   | H         | H         |
| REC · P             | O    | IC1- 29 | L    | L  | L   | L  | L        | L              | L   | H   | L         | H         |
| $\beta$ I           | O    | IC1- 30 | L    | L  | L   | *2 | *3       | *3             | *3  | L   | L         | L         |
| $\beta$ III         | O    | IC1- 31 | *1   | *1 | *1  | *2 | *3       | *3             | *3  | *1  | *1        | *1        |
| DOC PAUSE*4         | O    | IC1- 32 |      |    |     |    |          |                | L   |     |           |           |
| MC                  | O    | IC1- 35 | H    | H  | H   | H  | L        | L              | L   | H   | H         | H         |
| B HEAD*4            | O    | IC1- 36 |      |    |     |    |          |                |     |     |           |           |
| $\beta$ III STILL*4 | O    | IC1- 37 |      |    |     |    |          |                |     |     |           |           |
| V MUTE              | O    | IC1- 38 | L    | L  | L   | L  | L        | L              | L   | L   | L         | L         |
| SKEW IN*4           | I    | IC1- 39 |      |    |     |    |          |                |     |     |           |           |
| VD/TRCN             | O    | IC1- 70 | L    | L  | L   | L  | V D      | V D            | V D | L   | L         | L         |

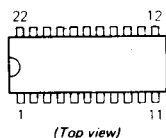
### 3-6. SYSTEM CONTROL CIRCUIT AND AUDIO CIRCUIT INTERFACE

| SIGNAL      | MODE |         | STOP | FF | REW | PB | PB-PAUSE | PICTURE SEARCH |     | REC | REC-PAUSE | TIMER REC |
|-------------|------|---------|------|----|-----|----|----------|----------------|-----|-----|-----------|-----------|
|             | I/O  | PIN No. |      |    |     |    |          | CUE            | REV |     |           |           |
| A-MUTE      | O    | IC1- 19 | L    | L  | L   | L  | H        | H              | H   | L   | L         | L         |
| BIAS CONT   | O    | IC1- 27 | H    | H  | H   | H  | H        | H              | H   | L   | H         | L         |
| $\beta$ III | O    | IC1- 31 | *1   | *1 | *1  | *2 | *3       | *3             | *3  | *1  | *1        | *1        |



# 4-3. SEMICONDUCTORS

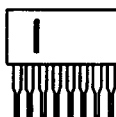
AN6291  
μPC1520CA



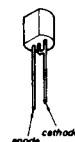
CX20043



M5201L



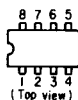
μPC574J



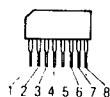
2SB734  
2SD773  
2SD774



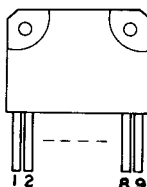
BA4558  
LM358P  
NJM4556D  
NJM4558D  
NJM4560D  
NJM4560D-D  
μPC358C  
μPC4558C  
μPC4558CR



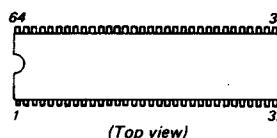
CX20061



M54543L



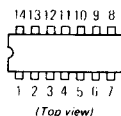
μPD7519CW-206



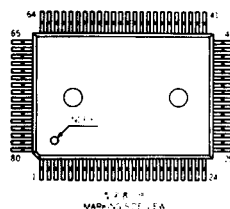
2SB740  
2SC1474  
2SC1475  
2SC1740S  
2SD788  
2SD789



CX20073  
CX7982  
CX7982A  
CXK1001P  
MB3614  
μPC324C



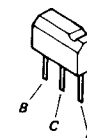
MB88551-130G



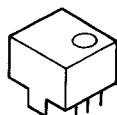
2SA1048 2SC403SP  
2SA1115 DTA114ES  
2SC2458 DTA144ES  
2SC2603 DTC124ES  
2SC2839 DTC144ES



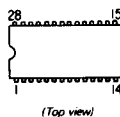
2SC1652  
2SC2021  
2SC2673  
DTA114EF



BX1317



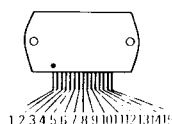
CX20014A  
CX20045  
CX866B



CX894  
LA7205  
LA7920



STK5441



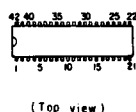
2SA1175  
2SC2785



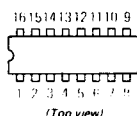
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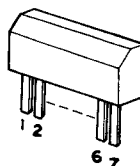
CX10021B-N  
CX10021B-NP  
CX194B-5  
CX20097  
CX20104  
CX20105  
CX20112  
CX7989-A



HD14052BP  
MB84052BP  
MSM4052BRS  
TC4052BP  
TK15010



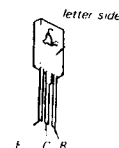
μPC1513HA



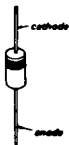
2SA933S



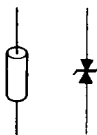
2SD882



10E-1  
10E-2  
11E-2  
ERA15-02C  
ERB12-02RK



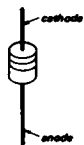
EQA11-09A



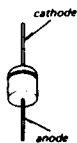
SIB-01-02



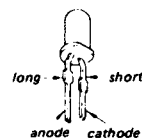
1SS119  
1SS148  
1SS202-1



ERC01-02FL15



TLG123A  
TLR123



MC911

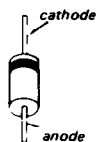
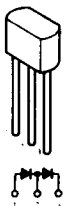


1SS133 RD36E-B1  
EQA02-06C RD39E-B2  
EQA02-07C RD39E-B3  
EQA02-07D RD39E-B4  
EQA02-32C RD5.1E-B  
EQA02-33A RD5.1E-L1  
HZ33E-B4 RD5.1E-L2  
HZ36E-B1 RD5.1E-L3  
HZ5.6E-B2 RD5.6E-B  
HZ6.2E-B1 RD5.6E-B1  
HZ6.2E-B2 RD5.6E-B2  
HZ6.2E-B3 RD5.6E-B3  
HZ7.5E-B1 RD6.2E-B  
HZ7.5E-B2 RD6.2E-B2  
HZ7.5E-B3 RD6.2E-B3  
RD10E-B3 RD6.2E-N2  
RD30E-B RD7.5E-B  
RD30E-B1 RD8.2E-B1  
RD30E-B2 RD9.1E-L1  
RD30E-B3 RD9.1E-L2  
RD30E-B4 RD9.1E-L3  
RD33E-B RD9.1E-N  
RD33E-B4

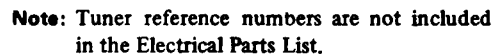
MC921



MC931



— BT-898 —



## SECTION 5

### EXPLODED VIEWS

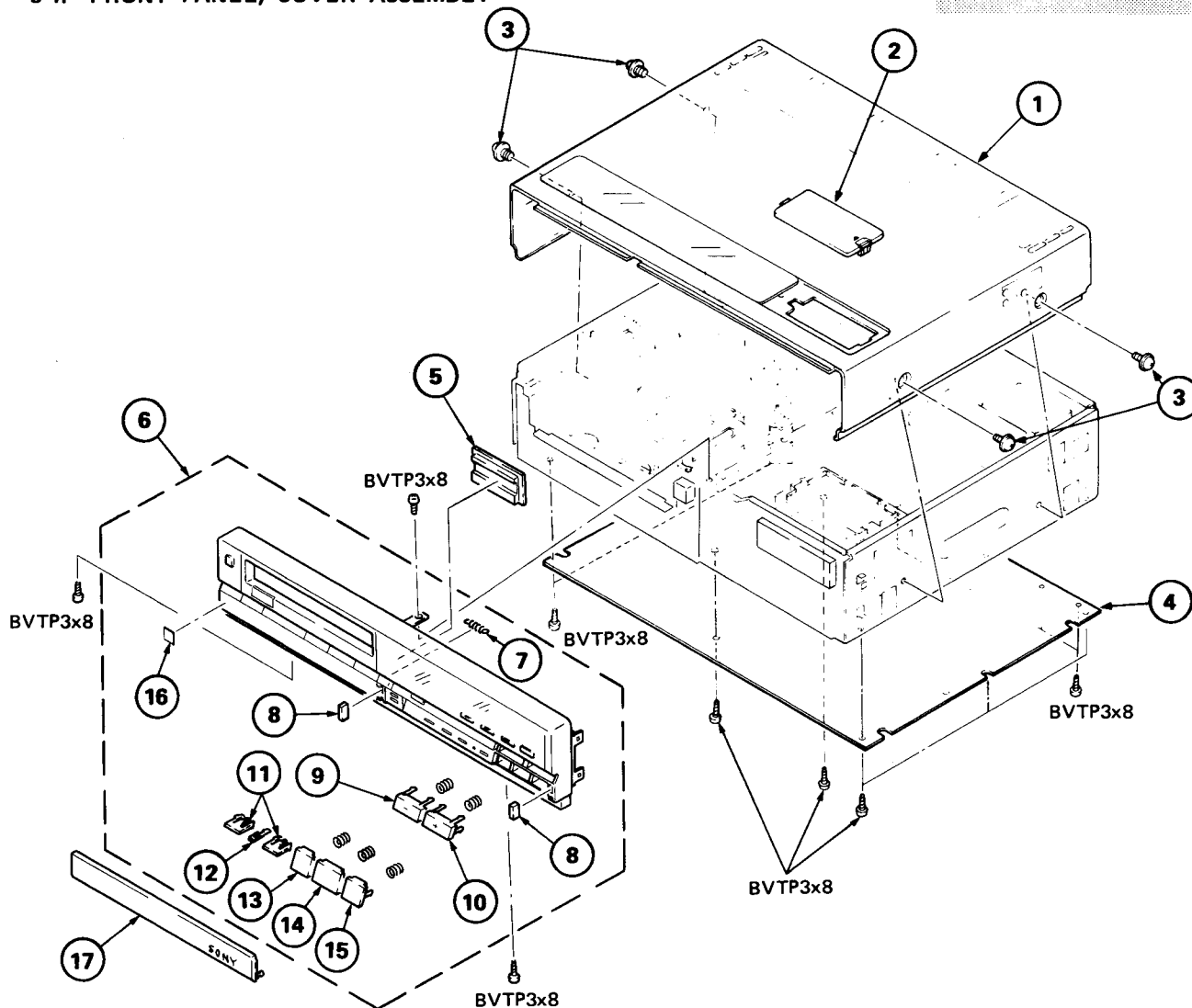
#### NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

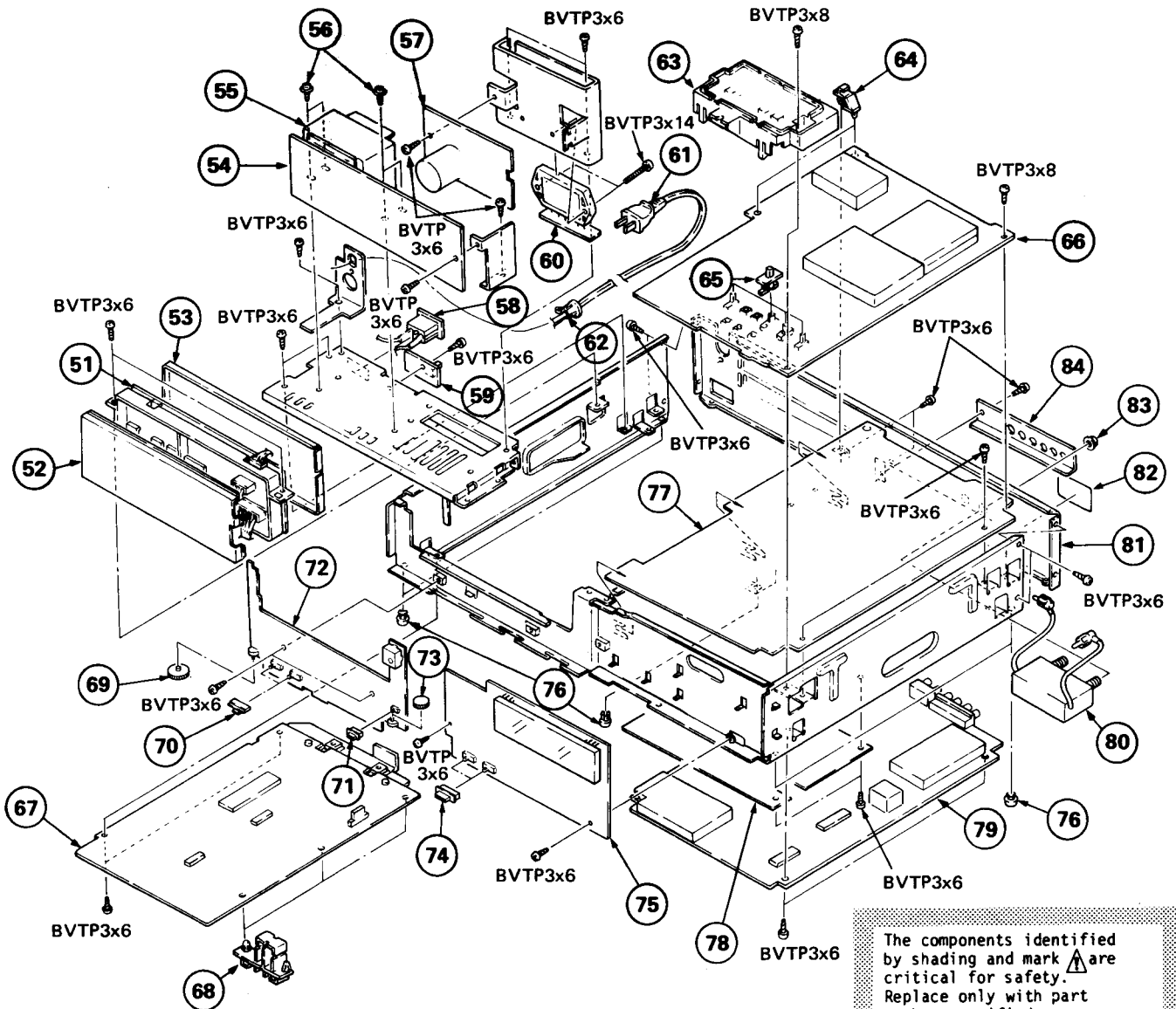
Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

#### 5-1. FRONT PANEL, COVER ASSEMBLY



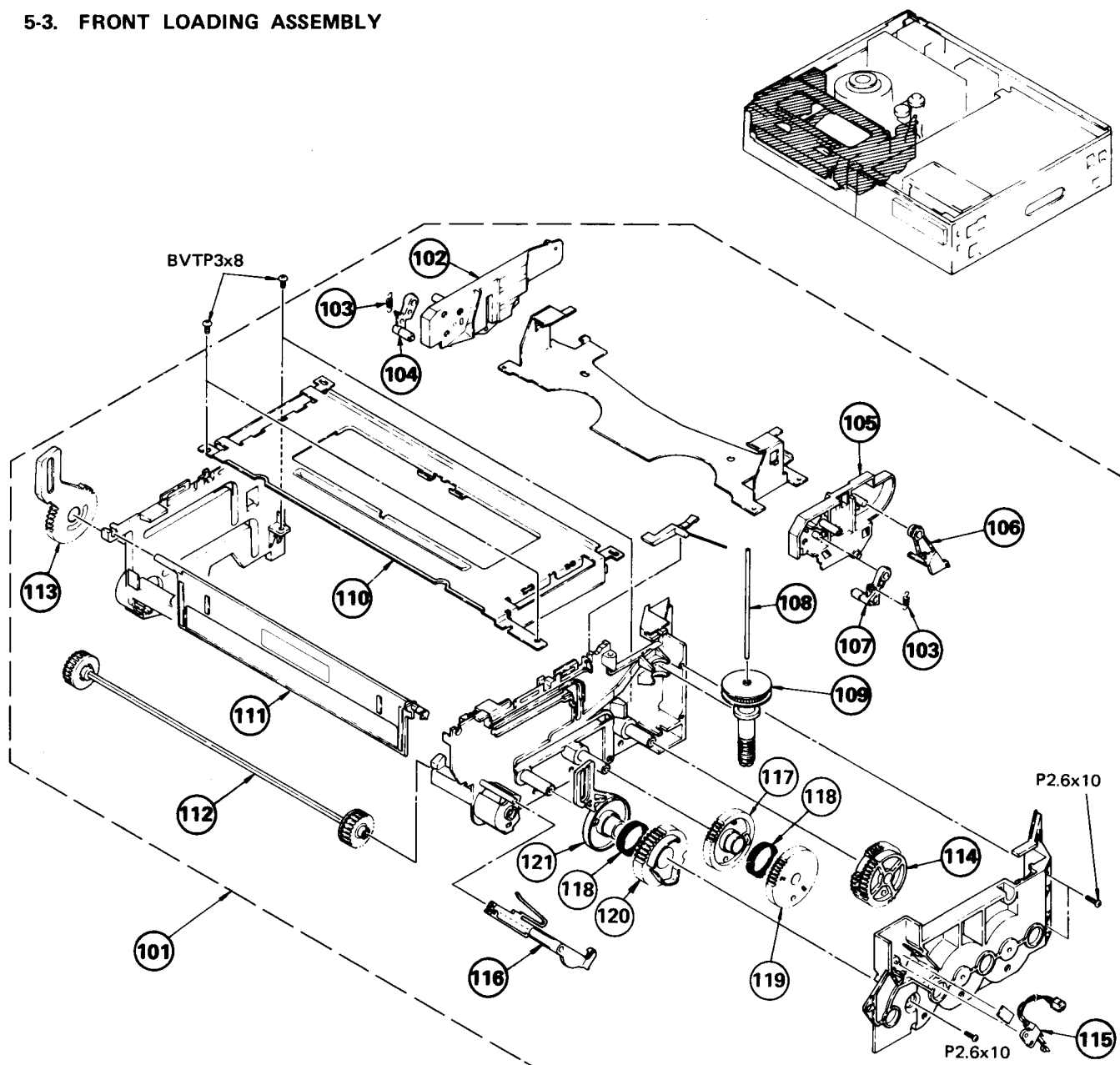
| No. | Part No.      | Description                | Remark | No. | Part No.     | Description                        | Remark |
|-----|---------------|----------------------------|--------|-----|--------------|------------------------------------|--------|
| 1   | X-3693-403-1  | CASE ASSY (SILVER), UPPER  |        | 10  | 3-693-420-01 | BUTTON (+), UD (SILVER)            |        |
|     | X-3693-404-1  | CASE ASSY (BLACK), UPPER   |        |     | 3-693-420-11 | BUTTON (+), UD (BLACK)             |        |
| 2   | X-3684-146-1  | LID ASSY, PRESET           |        | 11  | 3-693-404-01 | BUTTON, CHECK                      |        |
| 3   | 4-886-821-21  | SCREW, M3 CASE (BLACK)     |        | 12  | 3-693-405-01 | BUTTON, CLOCK                      |        |
|     | 4-886-821-31  | SCREW, M3 CASE (SILVER)    |        | 13  | 3-693-418-01 | BUTTON, TIMER                      |        |
| 4   | *3-684-356-01 | PLATE, BOTTOM              |        | 14  | 3-693-419-01 | BUTTON, NEXT                       |        |
| 5   | 1-520-481-11  | METER, LEVEL               |        | 15  | 3-693-418-11 | BUTTON, TIMER                      |        |
| 6   | X-3693-410-3  | PANEL ASSY, FRONT (BLACK)  | 7-16   | 16  | 3-703-713-01 | STICKER, SONY SYMBOL (10) (SILVER) |        |
|     | X-3693-411-3  | PANEL ASSY, FRONT (SILVER) | 7-16   |     | 3-703-713-41 | STICKER, SONY SYMBOL (10) (BLACK)  |        |
| 7   | 3-570-895-02  | SPRING, TENSION            |        | 17  | X-3693-408-1 | DOOR ASSY (SILVER)                 |        |
| 8   | 3-684-461-01  | MAGNET, POCKET LOCK        |        |     | X-3693-409-1 | DOOR ASSY (BLACK)                  |        |
| 9   | 3-693-421-01  | BUTTON (-), UD (SILVER)    |        |     |              |                                    |        |
|     | 3-693-421-11  | BUTTON (-), UD (BLACK)     |        |     |              |                                    |        |

## 5-2. TUNER, TIMER AND POWER ASSEMBLY



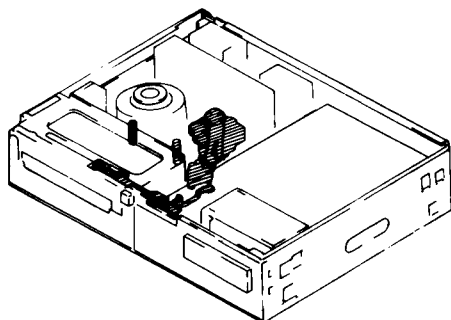
| No.            | Part No.      | Description                  | Remark | No. | Part No.       | Description                        | Remark |
|----------------|---------------|------------------------------|--------|-----|----------------|------------------------------------|--------|
| 51             | *A-6711-608-A | RP-28 BOARD, COMPLETE        | 52, 53 | 69  | 3-693-410-01   | KNOB, TRACK CONTROL                |        |
| 52             | *X-3684-338-1 | CASE (UPPER) ASSY, SHIELD RP |        | 70  | 3-693-409-01   | BUTTON (A), SLIDE                  |        |
| 53             | *3-684-369-01 | CASE (LOWER), SHIELD, RP     |        | 71  | 3-693-426-01   | KNOB, KG                           |        |
| 54             | *A-6723-268-A | PS-39 BOARD, COMPLETE        |        | 72  | *A-6717-396-A  | FU-38 BOARD, COMPLETE              |        |
| ▲ 1-448-153-11 |               | TRANSFORMER, POWER           |        | 73  | 3-693-411-01   | KNOB, SHARPNESS                    |        |
| 56             | 3-684-366-11  | SCREW (M3X6) (G), WH TAPPING |        | 74  | *3-693-427-01  | BUTTON (B), SLIDE                  |        |
| 57             | *1-612-789-11 | PS-40 BOARD                  |        | 75  | *A-6725-437-A  | TM-82 BOARD, COMPLETE              |        |
| ▲ 1-526-882-00 |               | OUTLET, AC                   |        | 76  | 3-670-155-11   | LEG                                |        |
| 59             | *1-612-791-11 | PS-42 BOARD                  |        | 77  | *A-6711-609-A  | VI-11 BOARD, COMPLETE              |        |
| 60             | *1-612-790-11 | PS-41 BOARD                  |        | 78  | *A-6721-233-A  | MP-7 BOARD, COMPLETE               |        |
| ▲ 1-557-480-11 |               | CORD, POWER                  |        | 79  | *A-6713-225-A  | AU-8 BOARD, COMPLETE               |        |
| ▲ 2-231-019-00 |               | CLAMPER, CORD                |        | 80  | ▲ 1-554-842-11 | SWITCH, ANTENNA CHANGE             |        |
| 63             | *X-3693-401-1 | PANEL ASSY, PRESET           |        | 81  | 3-684-354-02   | PANEL, REAR                        |        |
| 64             | *3-684-367-01 | HINGE, PCB                   |        | 82  | *3-693-433-01  | LABEL, MODEL NUMBER (U)            |        |
| 65             | 3-684-302-01  | KNOB (P3), SLIDE             |        |     | *3-693-434-01  | LABEL, MODEL NUMBER (U) (CANADIAN) |        |
| 66             | *A-6721-232-A | TU-77 BOARD, COMPLETE        |        | 83  | 3-682-691-00   | NUT, WASHER HEXAGON                |        |
| 67             | *A-6715-267-A | SS-32 BOARD, COMPLETE        |        | 84  | 3-693-416-01   | PANEL, REAR SUB                    |        |
| 68             | *3-682-081-00 | HOLDER, PCB                  |        |     |                |                                    |        |

### 5-3. FRONT LOADING ASSEMBLY



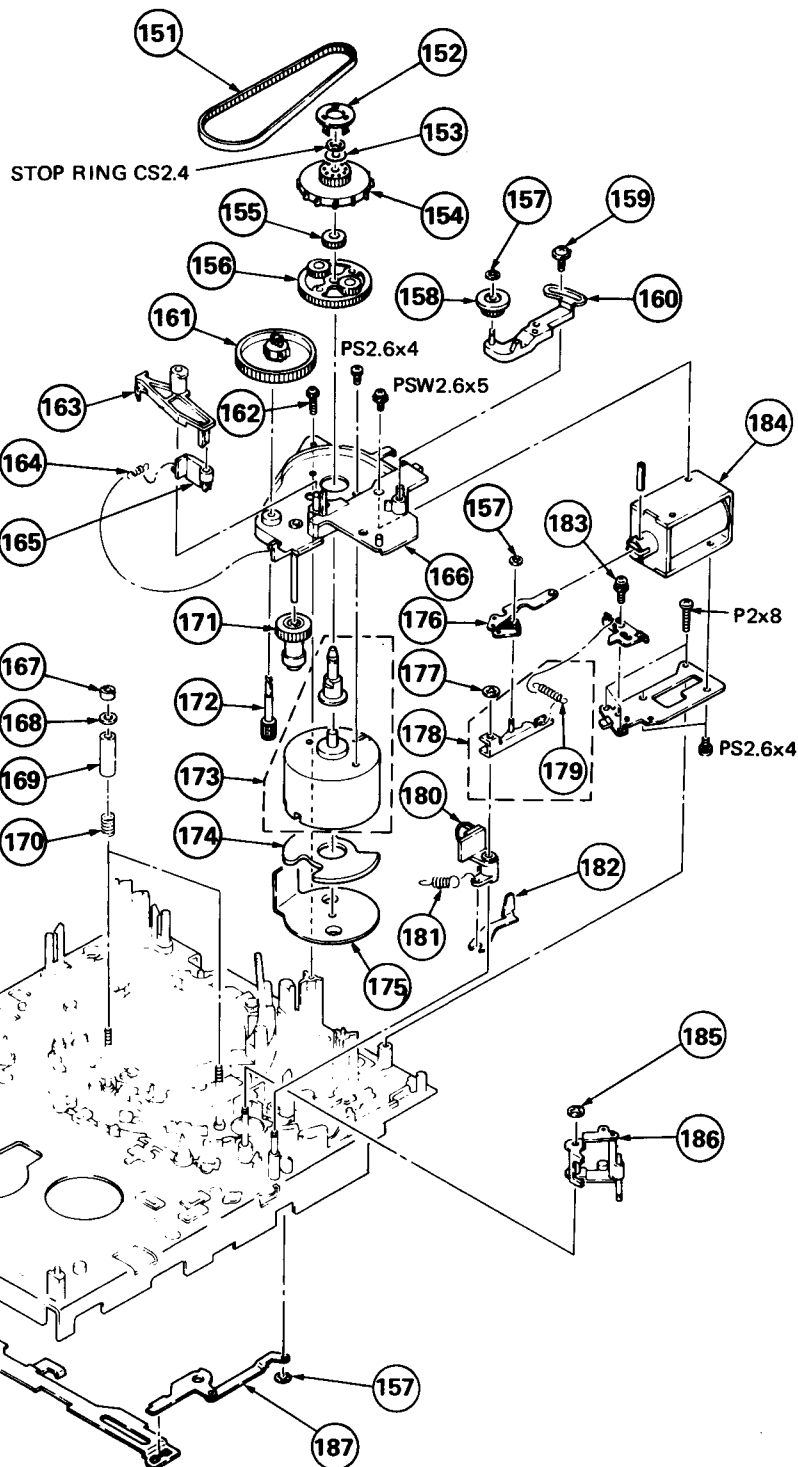
| No. | Part No.      | Description                     | Remark  | No. | Part No.      | Description             | Remark |
|-----|---------------|---------------------------------|---------|-----|---------------|-------------------------|--------|
| 101 | A-6751-241-B  | THREADING BLOCK ASSY, FRONT     | 102-121 | 112 | X-3684-116-1  | SHAFT ASSY, MIDWAY GEAR |        |
| 102 | *X-3684-117-1 | PLATE ASSY, SIDE, BASE (LEFT)   |         | 113 | *3-684-166-01 | ARM (LEFT), DRIVING     |        |
| 103 | 3-684-258-01  | SPRING, TENSION                 |         | 114 | X-3684-123-1  | GEAR ASSY, DRIVING      |        |
| 104 | X-3684-125-1  | RETAINER (LEFT) ASSY, CASSETTE  |         | 115 | 1-554-840-11  | SWITCH, LEAF (LOAD END) |        |
| 105 | *X-3684-118-1 | PLATE ASSY, SIDE, RIGHT         |         | 116 | 3-684-162-01  | ARM, SWITCHING, DOOR    |        |
| 106 | *3-684-108-01 | ARM, LID OPEN                   |         | 117 | 3-684-111-01  | GEAR (B), LIMITER       |        |
| 107 | X-3684-124-1  | RETAINER (RIGHT) ASSY, CASSETTE |         | 118 | 3-684-115-01  | SPRING                  |        |
| 108 | 3-679-123-00  | SHAFT, GEAR, WORM               |         | 119 | 3-684-109-01  | GEAR (A), LIMITER       |        |
| 109 | 3-684-164-01  | GEAR, WORM                      |         | 120 | 3-684-163-01  | GEAR, DRIVING ARM       |        |
| 110 | *3-684-195-11 | PLATE, TOP                      |         | 121 | 3-684-165-01  | ARM (RIGHT), DRIVING    |        |
| 111 | X-3691-652-3  | DOOR ASSY                       |         |     |               |                         |        |

## 5-4. CHASSIS ASSEMBLY 1



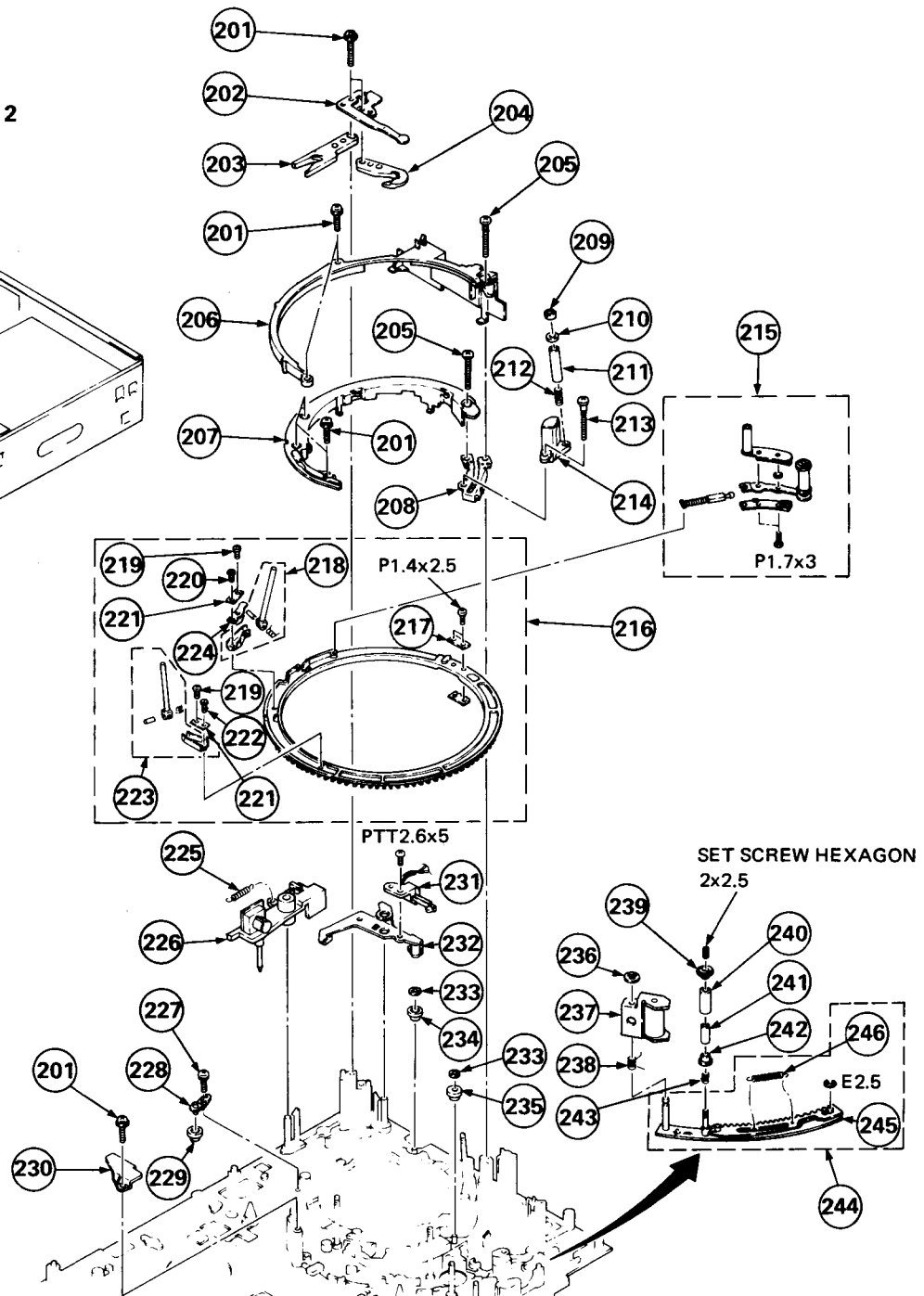
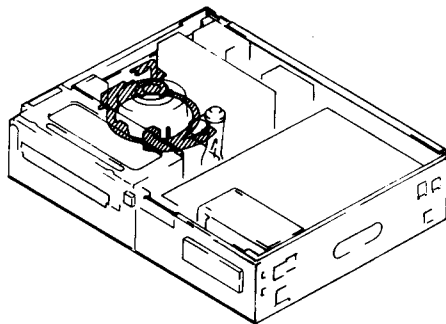
The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



| No. | Part No.     | Description                  | Remark | No. | Part No.                                                                                         | Description                      | Remark |
|-----|--------------|------------------------------|--------|-----|--------------------------------------------------------------------------------------------------|----------------------------------|--------|
| 151 | 3-684-264-01 | BELT, TIMING                 |        | 170 | 3-684-290-01                                                                                     | SPRING, COMPRESSION              |        |
| 152 | 3-684-152-01 | FLANGE, INTERNAL GEAR        |        | 171 | X-3669-321-0                                                                                     | GEAR (C) ASSY                    |        |
| 153 | 3-683-454-01 | WASHER, POLYETHYLENE         |        | 172 | 3-679-114-00                                                                                     | GEAR (SMALL), LOADING            |        |
| 154 | 3-684-178-01 | GEAR, INTERNAL               |        | 173 | X-3679-268-1                                                                                     | MOTOR ASSY, L                    |        |
| 155 | 3-679-104-05 | GEAR                         |        | 174 | *1-605-071-00                                                                                    | LM-16 BOARD                      |        |
| 156 | X-3679-111-0 | CARRIER ASSY                 |        | 175 | *3-669-613-00                                                                                    | INSULATOR, L MOTOR               |        |
| 157 | 3-669-465-00 | WASHER (1.5), STOPPER        |        | 176 | X-3684-109-1                                                                                     | ARM ASSY, PINCH SOLENOID         |        |
| 158 | 3-684-151-01 | GEAR                         |        | 177 | 3-669-595-00                                                                                     | WASHER (2), STOPPER              |        |
| 159 | 3-681-231-00 | SCREW (+PW 2.6X8), TAPPING   |        | 178 | *X-3684-112-1                                                                                    | ARM ASSY, PINCH LIMITER          | 179    |
| 160 | X-3684-119-1 | ARM ASSY, GEAR               |        | 179 | 3-515-170-00                                                                                     | SPRING, TENSION                  |        |
| 161 | 3-679-115-00 | GEAR (LARGE), LOADING        |        | 180 | 1-464-329-21                                                                                     | T COIL SENSOR                    |        |
| 162 | 3-669-480-11 | + PTPWH 2                    |        | 181 | 3-684-157-04                                                                                     | SPRING (T SENSOR), TENSION       |        |
| 163 | 3-684-167-01 | ARM, STOPPER                 |        | 182 | *3-684-119-01                                                                                    | LINK, TAKE-UP SENSOR             |        |
| 164 | 3-684-227-01 | SPRING, TENSION              |        | 183 | 3-669-607-00                                                                                     | +PSW (SMALL ROUND) 2.6           |        |
| 165 | 3-684-116-01 | LIMITER, STOPPER             |        | 184 |  1-454-340-51 | SOLENOID PLUNGER (PINCH) (PMS01) |        |
| 166 | X-3684-129-1 | CHASSIS ASSY, PLANET GEAR    |        | 185 | 3-669-596-00                                                                                     | WASHER (2.3), STOPPER            |        |
| 167 | 3-669-318-21 | NUT, ADJUSTMENT, GUIDE       |        | 186 | X-3684-113-1                                                                                     | ARM ASSY, PINCH PRESS            |        |
| 168 | 3-684-135-01 | WASHER (UPPER), GUIDE, #7, 8 |        | 187 | *X-3684-114-1                                                                                    | LEVER ASSY, COMMUNICATION        |        |
| 169 | 3-684-133-01 | SLEEVE, GUIDE, #7 8          |        |     |                                                                                                  |                                  |        |

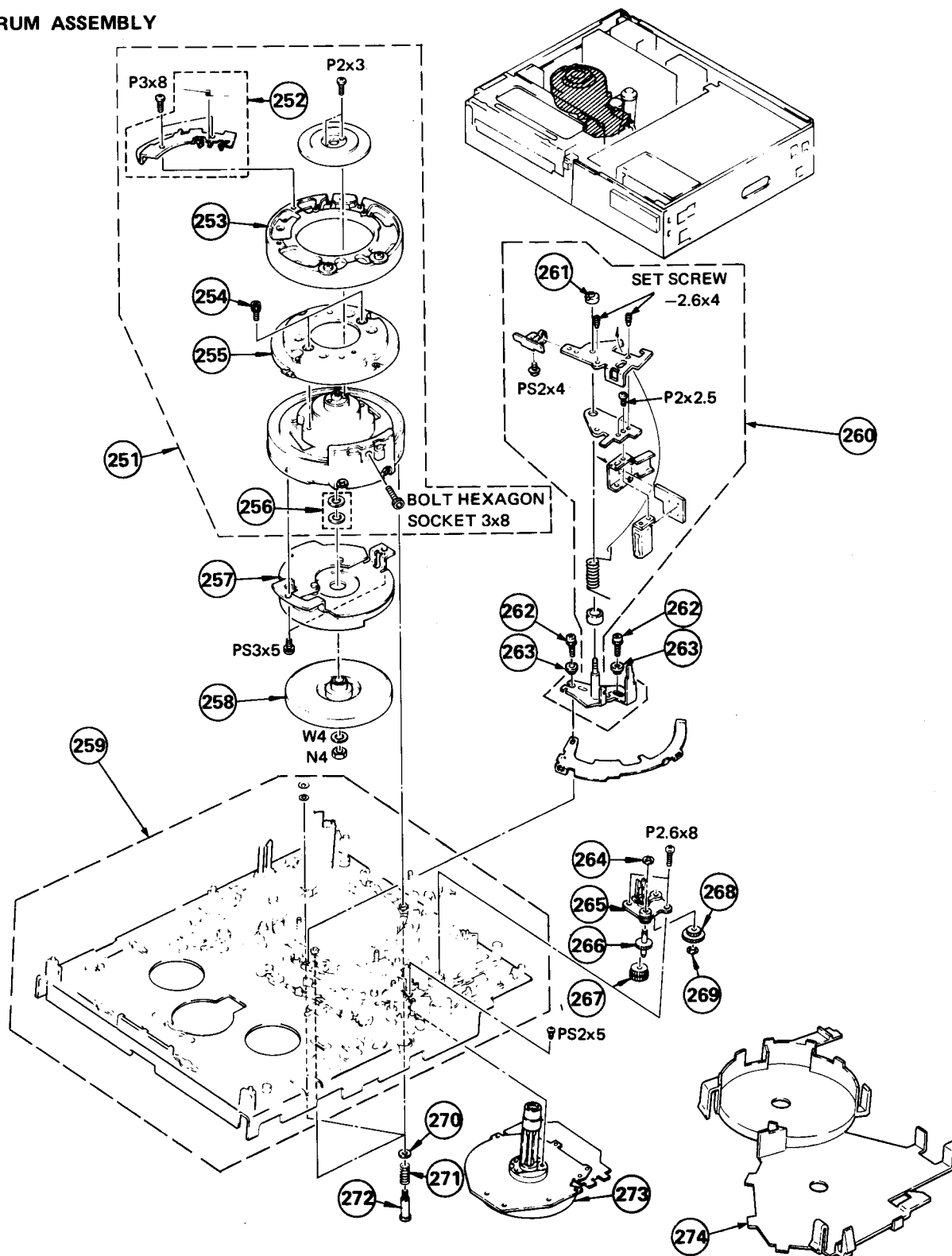
## 5-5. CHASSIS ASSEMBLY 2



| No. | Part No.      | Description                  | Remark  | No. | Part No.      | Description                | Remark   |
|-----|---------------|------------------------------|---------|-----|---------------|----------------------------|----------|
| 201 | 3-669-480-11  | + PTPWH 2                    |         | 224 | 3-672-583-00  | SPRING                     |          |
| 202 | *3-684-158-01 | PLATE, GROUND, TAPE GUIDE    |         | 225 | 3-684-161-01  | SPRING (S SENSOR), TENSION |          |
| 203 | *3-669-618-00 | PLATE (2), ADJUST            |         | 226 | 1-464-330-21  | S COIL SENSOR              |          |
| 204 | *3-672-507-00 | PLATE (3-1), ADJUSTMENT      |         | 227 | 3-669-607-31  | +PSW (SMALL ROUND) (2.6)   |          |
| 205 | 3-669-466-21  | SCREW (M 2.6)                |         | 228 | *X-3669-329-0 | PLATE ASSY, ADJUSTMENT     |          |
| 206 | 3-684-217-04  | GUIDE (2), SHUTTLE           |         | 229 | 3-669-360-00  | ROLLER, RING               |          |
| 207 | *3-679-290-00 | GUIDE (1-YA), SHUTTLE        |         | 230 | 3-669-476-04  | PLATE, GUIDE               |          |
| 208 | *X-3679-263-1 | BASE ASSY, SLANT             |         | 231 | 1-554-840-11  | SWITCH, LEAF (CASSETTE ON) |          |
| 209 | 3-669-446-00  | NUT, GUIDE, NO. 6            |         | 232 | *X-3684-130-1 | ARM ASSY, LOCK             |          |
| 210 | 3-679-910-00  | FLANGE (S), GUIDE, NUMBER 6  |         | 233 | 3-669-465-00  | WASHER (1.5), STOPPER      |          |
| 211 | 3-669-445-00  | SPACER, GUIDE, NO. 6         |         | 234 | 3-669-630-00  | ROLLER (C), RING           |          |
| 212 | 3-669-615-00  | SPRING, COMPRESSION          |         | 235 | 3-669-597-00  | ROLLER (B), RING           |          |
| 213 | 3-669-606-00  | SCREW (2.6)                  |         | 236 | 3-669-596-00  | WASHER (2.3), STOPPER      |          |
| 214 | 8-825-508-11  | HEAD, FE                     |         | 237 | X-3684-337-1  | ARM ASSY (B), PINCH ROLLER |          |
| 215 | A-6750-158-B  | SHUTTLE (2) BLOCK ASSY       |         | 238 | 3-683-441-01  | SPRING                     |          |
| 216 | X-3684-178-1  | RING (CF) ASSY, THREADING, S | 217-224 | 239 | 3-676-650-00  | FLANGE (UPPER) (#9), GUIDE |          |
| 217 | *3-669-616-00 | RETAINER                     |         | 240 | 3-676-649-11  | ROLLER (#9), GUIDE         |          |
| 218 | *X-3669-430-0 | HOLDER BLOCK ASSY, #3 GUIDE  |         | 241 | 3-672-559-00  | SLEEVE, GUIDE              |          |
| 219 | 3-669-478-00  | SCREW (1X3), TAPPING         |         | 242 | 3-672-558-00  | FLANGE (LOWER) (#9), GUIDE |          |
| 220 | 3-669-479-11  | SCREW (1.4X3.5), TAPPING     |         | 243 | 3-669-452-00  | SPRING, COMPRESSION        |          |
| 221 | *3-669-472-02 | RETAINER, SPRING, LEAF       |         | 244 | A-6750-165-A  | GEAR ASSY SLIDER           | 245, 246 |
| 222 | 3-672-586-00  | SCREW (1.4X3), TAPPING       |         | 245 | *X-3679-265-1 | SLIDER ASSY (2), T         |          |
| 223 | *X-3669-429-0 | HOLDER BLOCK ASSY, #2 GUIDE  |         | 246 | 3-549-014-00  | SPRING, TENSION            |          |

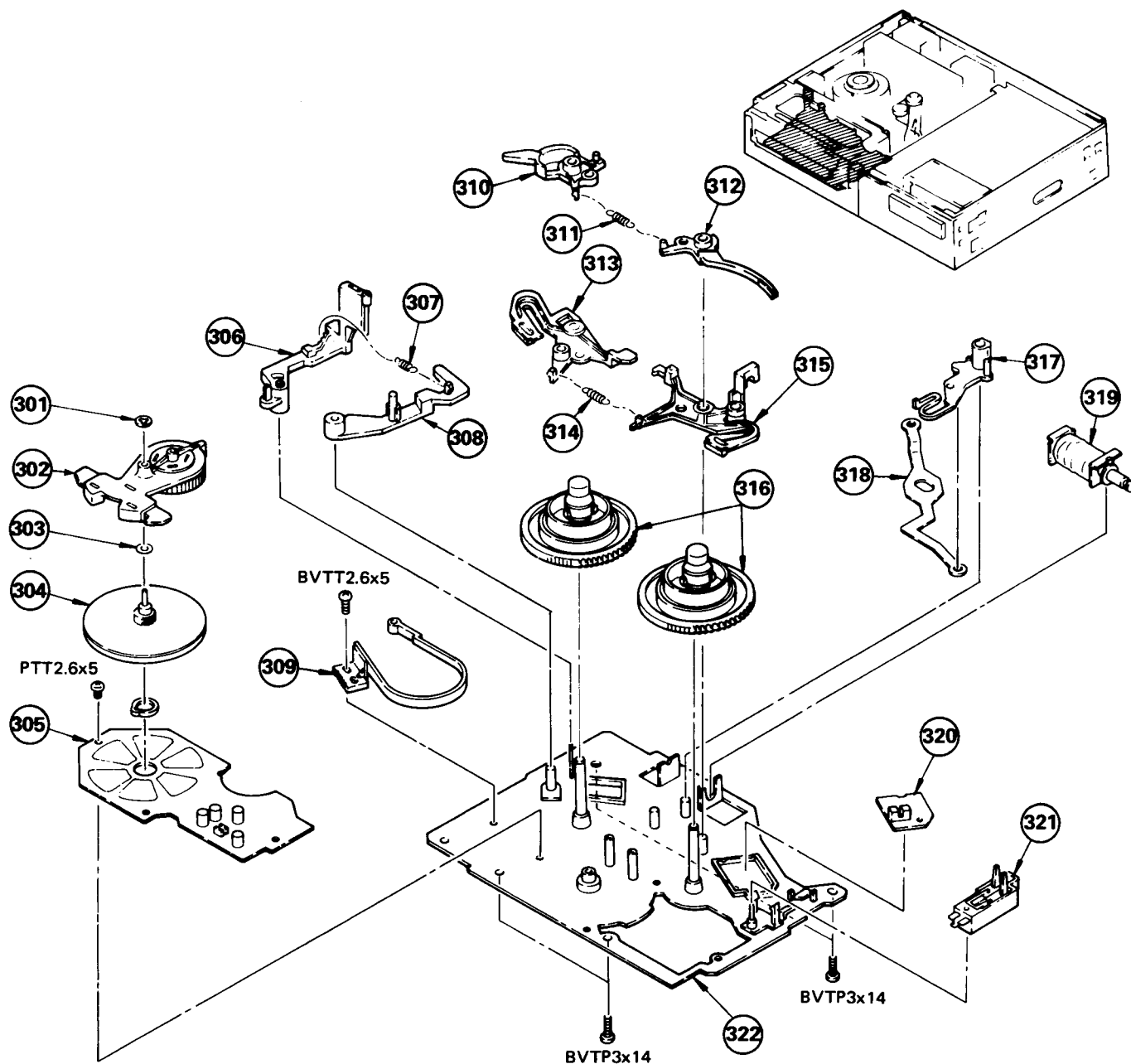


## 5-6. DRUM ASSEMBLY



| No. | Part No.      | Description                  | Remark  | No. | Part No.     | Description                   | Remark |
|-----|---------------|------------------------------|---------|-----|--------------|-------------------------------|--------|
| 251 | A-6050-259-A  | DRUM ASSY (DSH-50A-R)        | 252-256 | 263 | 3-684-247-01 | BUSHING, ACE                  |        |
| 252 | A-6760-066-B  | SPRING ASSY, TAPE RETAINER   |         | 264 | 3-669-595-00 | WASHER (2), STOPPER           |        |
| 253 | A-6760-138-A  | DRUM ASSY, UPPER             |         | 265 | X-3679-147-0 | CHASSIS (B) ASSY, DRIVE GEAR  |        |
| 254 | 3-669-157-00  | BOLT (WASHER) (2.6X8)        |         | 266 | X-3679-148-0 | GEAR (F) ASSY (D)             |        |
| 255 | A-6762-177-A  | DISK ASSY (DSR-50-R)         |         | 267 | 3-669-338-00 | GEAR (E)                      |        |
| 256 | X-3669-105-0  | SPACER BLOCK ASSY            |         | 268 | 3-669-337-00 | GEAR (D)                      |        |
| 257 | X-2621-210-2  | STATOR ASSY, D               |         | 269 | 3-669-465-00 | WASHER (1.5), STOPPER         |        |
| 258 | X-2621-202-0  | ROTOR ASSY, D                |         | 270 | 3-669-600-11 | WASHER, FLAT (3.5)            |        |
| 259 | *X-3684-134-4 | CHASSIS ASSY, MECHANICAL     |         | 271 | 3-429-123-00 | SPRING                        |        |
| 260 | A-6761-089-A  | ACE ASSY                     | 261     | 272 | 3-669-302-00 | SCREW, FITTING                |        |
| 261 | *3-684-246-02 | NUT, ADJUSTMENT, HEIGHT, ACE |         | 273 | 8-838-070-01 | CAPSTAN MOTOR, DC (BHF-1907B) |        |
| 262 | 3-693-439-01  | SCREW (P2.6X12), (+)         |         | 274 | 3-684-382-01 | PROTECTOR (B)                 |        |

## 5-7. REEL BASE ASSEMBLY



| No. | Part No.     | Description                           | Remark | No. | Part No.                | Description                                                   | Remark |
|-----|--------------|---------------------------------------|--------|-----|-------------------------|---------------------------------------------------------------|--------|
| 301 | 3-669-595-00 | WASHER (2), STOPPER                   |        | 318 | *3-684-183-01           | LINK, L                                                       |        |
| 302 | A-6759-074-A | ARM BLOCK ASSY, PENDULUM              |        | 319 | <del>A-4910-021-B</del> | <del>SOLENOID PLUNGER (BRAKE) (PN902)</del>                   |        |
| 303 | 3-679-318-00 | WASHER, PENDULUM ARM                  |        | 320 | *1-612-509-11           | MI-4 BOARD                                                    |        |
| 304 | X-2622-201-0 | ROTOR ASSY, R                         |        | 321 | 1-554-839-11            | SWITCH, LEAF (2 GANG)<br>(CASSETTE DOWN/REC PROOF)(S901, 902) |        |
| 305 | A-4910-021-B | R STATOR (REEL MOTOR) BOARD, COMPLETE |        | 322 | *X-3684-131-1           | CHASSIS ASSY, SUB                                             |        |
| 306 | X-3684-121-1 | LEVER ASSY, TENSION REGULATOR         |        |     |                         |                                                               |        |
| 307 | 3-679-151-00 | SPRING, TENSION                       |        |     |                         |                                                               |        |
| 308 | 3-684-211-01 | LEVER, FUNCTION                       |        |     |                         |                                                               |        |
| 309 | X-3679-120-0 | BAND ASSY, TENSION REGULATOR          |        |     |                         |                                                               |        |
| 310 | 3-684-192-01 | ARM, BRAKE, SUPPLY SOFT               |        |     |                         |                                                               |        |
| 311 | 3-684-235-01 | SPRING, TENSION                       |        |     |                         |                                                               |        |
| 312 | X-3684-137-1 | BRAKE ASSY, T SOFT                    |        |     |                         |                                                               |        |
| 313 | X-3684-107-1 | BRAKE ASSY, SUPPLY                    |        |     |                         |                                                               |        |
| 314 | 3-685-772-01 | SPRING, TENSION                       |        |     |                         |                                                               |        |
| 315 | X-3684-108-1 | BRAKE ASSY, TAKE-UP                   |        |     |                         |                                                               |        |
| 316 | X-3684-106-1 | TABLE ASSY, REEL                      |        |     |                         |                                                               |        |
| 317 | 3-684-193-01 | ARM, PENDULUM STOPPER                 |        |     |                         |                                                               |        |

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

## 5-8. HARDWARE LIST

### SCREW

7-621-770-67 SCREW +P 2.6X6  
7-621-773-86 SCREW +B 2.6X4  
7-627-552-38 SCREW, PRECISION +P 1.7X3  
7-627-553-47 SCREW, PRECISION +P 2X4  
7-627-554-07 SCREW, PRECISION +P 2X2.2  
  
7-628-253-15 SCREW +PS 2X5  
7-628-253-95 SCREW +PS 2.6X4  
7-685-134-14 SCREW +P 2.6X8 TYPE2 NON-SLIT  
7-685-135-14 SCREW +P 2.6X10 TYPE2 NON-SLIT  
7-685-645-71 SCREW +BVTP 3X6 TYPE2 IT-3  
  
7-685-645-81 SCREW +BVTP 3X6 TYPE2  
7-685-646-71 SCREW +BVTP 3X8 TYPE2 IT-3  
7-685-646-81 SCREW +BVTP 3X8 TYPE2  
7-685-649-14 SCREW +BVTP 3X14 TYPE2 N-S  
7-685-790-04 SCREW +PTT 2.6X4 (S)  
  
7-685-791-04 SCREW +PTT 2.6X5 (S)  
7-685-791-04 SCREW +BVTT 2.6X5 (S)

### SET-SCREW

7-621-731-08 SET-SCT, HEX. 2X2.5, FLAT POINT  
7-621-732-08 SET-SCT, HEX. 2X3 FLAT POINT  
7-683-174-21 SET-SCREW, SLOT 3X4 CONE POINT

### RING

7-624-118-01 RING, RETAINING E-2.5  
7-624-190-61 STOP RING 2.4, TYPE-CS

### TAPPING

7-685-105-14 TPG +P 2X8, TYPE 2, NON-SLIT

## ELECTRICAL PARTS LIST

## NOTE:

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

• Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

## RESISTORS

• All resistors are in ohms  
• F : nonflammable

## COILS

• MMH : mH, UH :  $\mu$ H

• Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

## CAPACITORS

• MF :  $\mu$ F, PF :  $\mu$  $\mu$ F

When indicating parts by reference number, please include the board name.

| Ref.No | Part No.      | Description                           | Remark  | Ref.No | Part No.      | Description           | Remark  |
|--------|---------------|---------------------------------------|---------|--------|---------------|-----------------------|---------|
|        | *A-4910-049-A | R STATOR (REEL MOTOR) BOARD, COMPLETE |         | C010   | 1-123-318-00  | ELECT 33MF            | 20% 16V |
|        |               | *****                                 |         | C011   | 1-101-004-00  | CERAMIC 0.01MF        | 50V     |
|        | *1-560-460-00 | PIN, CONNECTOR 4P                     |         | C012   | 1-123-306-00  | ELECT 47MF            | 20% 10V |
|        |               | CAPACITOR                             |         | C014   | 1-102-958-00  | CERAMIC 20PF          | 5% 50V  |
| C1     | 1-123-821-00  | ELECT 47MF                            | 20% 16V | C015   | 1-123-306-00  | ELECT 47MF            | 20% 10V |
| C2     | 1-123-821-00  | ELECT 47MF                            | 20% 16V | C016   | 1-101-004-00  | CERAMIC 0.01MF        | 50V     |
| C3     | 1-123-821-00  | ELECT 47MF                            | 20% 16V | C017   | 1-102-953-00  | CERAMIC 18PF          | 5% 50V  |
| C4     | 1-123-821-00  | ELECT 47MF                            | 20% 16V | C019   | 1-101-004-00  | CERAMIC 0.01MF        | 50V     |
|        |               | DIODE                                 |         | C020   | 1-101-004-00  | CERAMIC 0.01MF        | 50V     |
| D1     | 8-719-941-48  | DIODE 1N4148TP                        |         | C021   | 1-123-306-00  | ELECT 47MF            | 20% 10V |
|        |               | IC                                    |         | C022   | 1-101-004-00  | CERAMIC 0.01MF        | 50V     |
| IC1    | 8-759-108-77  | IC CX-877                             |         | C023   | 1-123-379-00  | ELECT 0.47MF          | 20% 50V |
|        |               | TRANSISTOR                            |         | C024   | 1-123-306-00  | ELECT 47MF            | 20% 10V |
| Q1     | 8-729-100-01  | TRANSISTOR 2SD992-N                   |         | C028   | 1-123-306-00  | ELECT 47MF            | 20% 10V |
| Q2     | 8-729-100-01  | TRANSISTOR 2SD992-N                   |         | C029   | 1-101-004-00  | CERAMIC 0.01MF        | 50V     |
| Q3     | 8-729-100-01  | TRANSISTOR 2SD992-N                   |         | C033   | 1-123-379-00  | ELECT 0.47MF          | 20% 50V |
| Q4     | 8-729-100-01  | TRANSISTOR 2SD992-N                   |         | C034   | 1-101-004-00  | CERAMIC 0.01MF        | 50V     |
| Q5     | 8-729-100-01  | TRANSISTOR 2SD992-N                   |         | C035   | 1-123-306-00  | ELECT 47MF            | 20% 10V |
| Q6     | 8-729-100-01  | TRANSISTOR 2SD992-N                   |         | C036   | 1-161-039-00  | CERAMIC 0.001MF       | 10% 25V |
|        |               | RESISTOR                              |         | C037   | 1-101-004-00  | CERAMIC 0.01MF        | 50V     |
| R1     | 1-247-823-00  | CARBON 470 5% 1/6W                    |         | C038   | 1-101-004-00  | CERAMIC 0.01MF        | 50V     |
| R2     | 1-247-823-00  | CARBON 470 5% 1/6W                    |         | C039   | 1-123-306-00  | ELECT 47MF            | 20% 10V |
| R3     | 1-247-823-00  | CARBON 470 5% 1/6W                    |         | C040   | 1-101-004-00  | CERAMIC 0.01MF        | 50V     |
| R4     | 1-247-829-00  | CARBON 820 5% 1/6W                    |         | C041   | 1-101-004-00  | CERAMIC 0.01MF        | 50V     |
| R5     | 1-247-871-00  | CARBON 47K 5% 1/6W                    |         | C043   | 1-102-978-00  | CERAMIC 220PF         | 5% 50V  |
| R6     | 1-247-871-00  | CARBON 47K 5% 1/6W                    |         |        | CONNECTOR     |                       |         |
| R7     | 1-247-871-00  | CARBON 47K 5% 1/6W                    |         | CN001  | *1-508-848-00 | PIN, CONNECTOR 6P     |         |
| R8     | 1-247-871-00  | CARBON 47K 5% 1/6W                    |         | CN002  | *1-564-027-00 | PIN, CONNECTOR 2P     |         |
|        |               | DIODE                                 |         | CN003  | *1-560-894-00 | PIN, CONNECTOR 6P     |         |
| S1     | 8-719-810-31  | DIODE THS103-1                        |         | CN004  | *1-564-030-00 | PIN, CONNECTOR 5P     |         |
| S2     | 8-719-810-31  | DIODE THS103-1                        |         | CN005  | *1-560-895-00 | PIN, CONNECTOR 7P     |         |
|        |               | *****                                 |         |        | DIODE         |                       |         |
|        | *A-6711-608-A | RP-28 BOARD, COMPLETE                 |         | D002   | 8-719-911-19  | DIODE 1SS119          |         |
|        |               | *****                                 |         |        | IC            |                       |         |
|        | *3-684-368-02 | CASE (UPPER), SHIELD, RP              |         | IC001  | 8-752-004-50  | IC CX20045            |         |
|        | *3-684-369-01 | CASE (LOWER), SHIELD, RP              |         |        | COIL          |                       |         |
|        | *3-684-370-01 | CASE (MAIN), SHIELD, RP               |         | L002   | 1-408-421-00  | MICRO INDUCTOR 100UH  |         |
|        | *3-685-202-01 | PLATE, SHIELD, RP INTERNAL            |         | L003   | 1-408-411-00  | MICRO INDUCTOR 15UH   |         |
|        |               | CAPACITOR                             |         | L004   | 1-408-411-00  | MICRO INDUCTOR 15UH   |         |
| C001   | 1-101-004-00  | CERAMIC 0.01MF                        | 50V     | L007   | 1-408-600-00  | MICRO INDUCTOR 5.6UH  |         |
| C003   | 1-101-004-00  | CERAMIC 0.01MF                        | 50V     | L008   | 1-408-877-00  | MICRO INDUCTOR 0.22UH |         |
| C008   | 1-101-004-00  | CERAMIC 0.01MF                        | 50V     | L009   | 1-410-175-11  | MICRO INDUCTOR 330UH  |         |
| C009   | 1-101-004-00  | CERAMIC 0.01MF                        | 50V     | L010   | 1-408-877-00  | MICRO INDUCTOR 0.22UH |         |
|        |               |                                       |         | L011   | 1-410-175-11  | MICRO INDUCTOR 330UH  |         |
|        |               |                                       |         | L012   | 1-408-600-00  | MICRO INDUCTOR 5.6UH  |         |
|        |               |                                       |         | L013   | 1-408-421-00  | MICRO INDUCTOR 100UH  |         |
|        |               |                                       |         | L014   | 1-408-421-00  | MICRO INDUCTOR 100UH  |         |
|        |               |                                       |         | L015   | 1-408-421-00  | MICRO INDUCTOR 100UH  |         |

| Ref.No                                                                  | Part No.     | Description           | Remark | Ref.No | Part No.     | Description     | Remark  |
|-------------------------------------------------------------------------|--------------|-----------------------|--------|--------|--------------|-----------------|---------|
| <u>TRANSISTOR</u>                                                       |              |                       |        | C118   | 1-102-820-00 | CERAMIC 330PF   | 5% 50V  |
| <del>0003 A 1-8-729-245-83 TRANSISTOR 2500450 00-220-131-17-14143</del> |              |                       |        | C119   | 1-102-973-00 | CERAMIC 100PF   | 5% 50V  |
| <u>RESISTOR</u>                                                         |              |                       |        | C120   | 1-102-074-00 | CERAMIC 0.001MF | 10% 50V |
| R001                                                                    | 1-247-817-00 | CARBON 270 5% 1/6W    |        | C121   | 1-161-059-00 | CERAMIC 0.047MF | 10% 25V |
| R002                                                                    | 1-247-815-00 | CARBON 220 5% 1/6W    |        | C122   | 1-102-116-00 | CERAMIC 680PF   | 10% 50V |
| R009                                                                    | 1-247-807-00 | CARBON 100 5% 1/6W    |        | C123   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| R010                                                                    | 1-247-855-00 | CARBON 10K 5% 1/6W    |        | C124   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| R011                                                                    | 1-247-823-00 | CARBON 470 5% 1/6W    |        | C125   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| R012                                                                    | 1-247-827-00 | CARBON 680 5% 1/6W    |        | C126   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| <del>R015 A 1-247-896-11 CARBON 470 5% 1/6W - F ESPO</del>              |              |                       |        | C127   | 1-123-330-00 | ELECT 22MF      | 20% 16V |
| R016                                                                    | 1-247-826-00 | CARBON 620 5% 1/6W    |        | C128   | 1-102-973-00 | CERAMIC 100PF   | 5% 50V  |
| R017                                                                    | 1-247-799-00 | CARBON 47 5% 1/6W     |        | C129   | 1-123-306-00 | ELECT 47MF      | 20% 10V |
| R018                                                                    | 1-247-799-00 | CARBON 47 5% 1/6W     |        | C130   | 1-123-382-00 | ELECT 3.3MF     | 20% 50V |
| R019                                                                    | 1-247-826-00 | CARBON 620 5% 1/6W    |        | C131   | 1-123-380-00 | ELECT 1MF       | 20% 50V |
| R020                                                                    | 1-247-831-00 | CARBON 1K 5% 1/6W     |        | C132   | 1-102-816-00 | CERAMIC 120PF   | 5% 50V  |
| R023                                                                    | 1-247-831-00 | CARBON 1K 5% 1/6W     |        | C133   | 1-123-356-00 | ELECT 10MF      | 20% 16V |
| R025                                                                    | 1-247-821-00 | CARBON 390 5% 1/6W    |        | C134   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| R026                                                                    | 1-247-827-00 | CARBON 680 5% 1/6W    |        | C135   | 1-161-059-00 | CERAMIC 0.047MF | 10% 25V |
| R027                                                                    | 1-247-831-00 | CARBON 1K 5% 1/6W     |        | C136   | 1-101-361-00 | CERAMIC 150PF   | 5% 50V  |
| R028                                                                    | 1-247-831-00 | CARBON 1K 5% 1/6W     |        | C137   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| R029                                                                    | 1-247-827-00 | CARBON 680 5% 1/6W    |        | C138   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| R030                                                                    | 1-247-821-00 | CARBON 390 5% 1/6W    |        | C139   | 1-123-306-00 | ELECT 47MF      | 20% 10V |
| R032                                                                    | 1-247-857-00 | CARBON 12K 5% 1/6W    |        | C140   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| R034                                                                    | 1-247-831-00 | CARBON 1K 5% 1/6W     |        | C141   | 1-130-485-00 | MYLAR 0.015MF   | 5% 50V  |
| <u>VARIABLE RESISTOR</u>                                                |              |                       |        | C142   | 1-102-973-00 | CERAMIC 100PF   | 5% 50V  |
| RV002                                                                   | 1-228-921-00 | RES, ADJ, CARBON 4.7K |        | C143   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| RV003                                                                   | 1-228-921-00 | RES, ADJ, CARBON 4.7K |        | C144   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| *****                                                                   |              |                       |        | C145   | 1-161-025-00 | CERAMIC 0.1MF   | 10% 25V |
| *A-6711-609-A VI-11 BOARD, COMPLETE                                     |              |                       |        | C146   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| *****                                                                   |              |                       |        | C147   | 1-102-959-00 | CERAMIC 22PF    | 5% 50V  |
| <u>CAPACITOR</u>                                                        |              |                       |        | C201   | 1-101-059-00 | CERAMIC 510PF   | 5% 50V  |
| C101                                                                    | 1-123-306-00 | ELECT 47MF 20% 10V    |        | C202   | 1-102-821-00 | CERAMIC 360PF   | 5% 50V  |
| C103                                                                    | 1-102-963-00 | CERAMIC 33PF 5% 50V   |        | C203   | 1-102-976-00 | CERAMIC 180PF   | 5% 50V  |
| C104                                                                    | 1-102-952-00 | CERAMIC 16PF 5% 50V   |        | C204   | 1-123-369-00 | ELECT 4.7MF     | 20% 25V |
| C105                                                                    | 1-102-961-00 | CERAMIC 27PF 5% 50V   |        | C205   | 1-102-822-00 | CERAMIC 390PF   | 5% 50V  |
| C106                                                                    | 1-123-306-00 | ELECT 47MF 20% 10V    |        | C206   | 1-101-059-00 | CERAMIC 510PF   | 5% 50V  |
| C107                                                                    | 1-123-356-00 | ELECT 10MF 20% 16V    |        | C207   | 1-102-978-00 | CERAMIC 220PF   | 5% 50V  |
| C108                                                                    | 1-102-953-00 | CERAMIC 18PF 5% 50V   |        | C208   | 1-102-978-00 | CERAMIC 220PF   | 5% 50V  |
| C109                                                                    | 1-102-965-00 | CERAMIC 39PF 5% 50V   |        | C209   | 1-123-356-00 | ELECT 10MF      | 20% 16V |
| C110                                                                    | 1-102-965-00 | CERAMIC 39PF 5% 50V   |        | C210   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
| C111                                                                    | 1-102-947-00 | CERAMIC 10PF 5% 50V   |        | C211   | 1-123-306-00 | ELECT 47MF      | 20% 10V |
| C112                                                                    | 1-123-306-00 | ELECT 47MF 20% 10V    |        | C213   | 1-123-380-00 | ELECT 1MF       | 20% 50V |
| C113                                                                    | 1-123-306-00 | ELECT 47MF 20% 10V    |        | C231   | 1-102-973-00 | CERAMIC 100PF   | 5% 50V  |
| C114                                                                    | 1-101-004-00 | CERAMIC 0.01MF 50V    |        | C232   | 1-123-369-00 | ELECT 4.7MF     | 20% 25V |
| C115                                                                    | 1-101-004-00 | CERAMIC 0.01MF 50V    |        | C233   | 1-123-306-00 | ELECT 47MF      | 20% 10V |
| C116                                                                    | 1-101-004-00 | CERAMIC 0.01MF 50V    |        | C234   | 1-123-306-00 | ELECT 47MF      | 20% 10V |
| C117                                                                    | 1-101-004-00 | CERAMIC 0.01MF 50V    |        | C235   | 1-102-980-00 | CERAMIC 270PF   | 5% 50V  |
|                                                                         |              |                       |        | C236   | 1-130-478-00 | MYLAR 0.0039MF  | 5% 50V  |
|                                                                         |              |                       |        | C237   | 1-102-820-00 | CERAMIC 330PF   | 5% 50V  |
|                                                                         |              |                       |        | C238   | 1-101-880-00 | CERAMIC 47PF    | 5% 50V  |
|                                                                         |              |                       |        | C239   | 1-123-306-00 | ELECT 47MF      | 20% 10V |
|                                                                         |              |                       |        | C240   | 1-101-004-00 | CERAMIC 0.01MF  | 50V     |
|                                                                         |              |                       |        | C241   | 1-123-306-00 | ELECT 47MF      | 20% 10V |

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No.     | Description | Remark           | Ref.No | Part No.     | Description  | Remark           |
|--------|--------------|-------------|------------------|--------|--------------|--------------|------------------|
| C242   | 1-102-980-00 | CERAMIC     | 270PF 5% 50V     | C412   | 1-102-521-00 | CERAMIC      | 43PF 5% 50V      |
| C243   | 1-130-471-00 | MYLAR       | 0.001MF 5% 50V   | C413   | 1-102-119-00 | CERAMIC      | 0.0015MF 10% 50V |
| C244   | 1-101-884-00 | CERAMIC     | 56PF 5% 50V      | C414   | 1-161-055-00 | CERAMIC      | 0.022MF 10% 25V  |
| C245   | 1-102-971-00 | CERAMIC     | 82PF 5% 50V      | C415   | 1-123-380-00 | ELECT        | 1MF 20% 50V      |
| C246   | 1-102-976-00 | CERAMIC     | 180PF 5% 50V     | C416   | 1-123-380-00 | ELECT        | 1MF 20% 50V      |
| C247   | 1-123-380-00 | ELECT       | 1MF 20% 50V      | C417   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C248   | 1-101-059-00 | CERAMIC     | 510PF 5% 50V     | C418   | 1-102-815-00 | CERAMIC      | 110PF 5% 50V     |
| C249   | 1-123-369-00 | ELECT       | 4.7MF 20% 25V    | C419   | 1-102-976-00 | CERAMIC      | 180PF 5% 50V     |
| C250   | 1-102-125-00 | CERAMIC     | 0.0047MF 10% 50V | C420   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C251   | 1-102-947-00 | CERAMIC     | 10PF 5% 50V      | C421   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C252   | 1-102-953-00 | CERAMIC     | 18PF 5% 50V      | C422   | 1-123-356-00 | ELECT        | 10MF 20% 16V     |
| C253   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C423   | 1-123-356-00 | ELECT        | 10MF 20% 16V     |
| C254   | 1-123-380-00 | ELECT       | 1MF 20% 50V      | C424   | 1-161-024-00 | CERAMIC      | 0.082MF 10% 25V  |
| C255   | 1-102-976-00 | CERAMIC     | 180PF 5% 50V     | C425   | 1-123-380-00 | ELECT        | 1MF 20% 50V      |
| C301   | 1-123-330-00 | ELECT       | 22MF 20% 16V     | C426   | 1-102-516-00 | CERAMIC      | 27PF 5% 50V      |
| C302   | 1-123-330-00 | ELECT       | 22MF 20% 16V     | C427   | 1-101-888-00 | CERAMIC      | 68PF 5% 50V      |
| C303   | 1-101-880-00 | CERAMIC     | 47PF 5% 50V      | C428   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C304   | 1-102-980-00 | CERAMIC     | 270PF 5% 50V     | C429   | 1-102-971-00 | CERAMIC      | 82PF 5% 50V      |
| C305   | 1-123-330-00 | ELECT       | 22MF 20% 16V     | C430   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C306   | 1-123-356-00 | ELECT       | 10MF 20% 16V     | C431   | 1-123-369-00 | ELECT        | 4.7MF 20% 25V    |
| C307   | 1-123-369-00 | ELECT       | 4.7MF 20% 25V    | C432   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C308   | 1-123-330-00 | ELECT       | 22MF 20% 16V     | C433   | 1-123-306-00 | ELECT        | 47MF 20% 10V     |
| C309   | 1-123-330-00 | ELECT       | 22MF 20% 16V     | C434   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C310   | 1-101-884-00 | CERAMIC     | 56PF 5% 50V      | C435   | 1-123-306-00 | ELECT        | 47MF 20% 10V     |
| C311   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C436   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C312   | 1-101-888-00 | CERAMIC     | 68PF 5% 50V      | C437   | 1-161-059-00 | CERAMIC      | 0.047MF 10% 25V  |
| C313   | 1-102-936-00 | CERAMIC     | 3PF 0.25PF 50V   | C438   | 1-102-973-00 | CERAMIC      | 100PF 5% 50V     |
| C314   | 1-123-306-00 | ELECT       | 47MF 20% 10V     | C439   | 1-101-880-00 | CERAMIC      | 47PF 5% 50V      |
| C316   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C440   | 1-102-978-00 | CERAMIC      | 220PF 5% 50V     |
| C317   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C441   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C319   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C442   | 1-102-966-00 | CERAMIC      | 43PF 5% 50V      |
| C320   | 1-123-381-00 | ELECT       | 2.2MF 20% 50V    | C443   | 1-101-081-00 | CERAMIC      | 130PF 5% 50V     |
| C321   | 1-123-381-00 | ELECT       | 2.2MF 20% 50V    | C444   | 1-102-966-00 | CERAMIC      | 43PF 5% 50V      |
| C322   | 1-123-306-00 | ELECT       | 47MF 20% 10V     | C445   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C323   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C447   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C324   | 1-123-356-00 | ELECT       | 10MF 20% 16V     | C448   | 1-123-356-00 | ELECT        | 10MF 20% 16V     |
| C325   | 1-123-356-00 | ELECT       | 10MF 20% 16V     | C502   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C326   | 1-102-820-00 | CERAMIC     | 330PF 5% 50V     | C503   | 1-127-460-00 | ELECT(SOLID) | 1MF 20% 25V      |
| C327   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C504   | 1-127-460-00 | ELECT(SOLID) | 1MF 20% 25V      |
| C328   | 1-102-947-00 | CERAMIC     | 10PF 5% 50V      | C505   | 1-123-356-00 | ELECT        | 10MF 20% 16V     |
| C330   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C506   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C331   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C507   | 1-123-306-00 | ELECT        | 47MF 20% 10V     |
| C332   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C508   | 1-102-816-00 | CERAMIC      | 120PF 5% 50V     |
| C401   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C509   | 1-102-980-00 | CERAMIC      | 270PF 5% 50V     |
| C402   | 1-123-380-00 | ELECT       | 1MF 20% 50V      | C510   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C403   | 1-123-306-00 | ELECT       | 47MF 20% 10V     | C511   | 1-102-121-00 | CERAMIC      | 0.0022MF 10% 50V |
| C404   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C512   | 1-123-369-00 | ELECT        | 4.7MF 20% 25V    |
| C405   | 1-123-369-00 | ELECT       | 4.7MF 20% 25V    | C513   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C406   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C515   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C407   | 1-123-380-00 | ELECT       | 1MF 20% 50V      | C516   | 1-101-004-00 | CERAMIC      | 0.01MF 50V       |
| C408   | 1-161-013-00 | CERAMIC     | 0.01MF 10% 25V   | C517   | 1-161-059-00 | CERAMIC      | 0.047MF 10% 25V  |
| C410   | 1-101-004-00 | CERAMIC     | 0.01MF 50V       | C518   | 1-123-381-00 | ELECT        | 2.2MF 20% 50V    |
| C411   | 1-102-119-00 | CERAMIC     | 0.0015MF 10% 50V | C519   | 1-123-306-00 | ELECT        | 47MF 20% 10V     |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No.      | Description              | Remark  | Ref.No | Part No. | Description       | Remark |
|--------|---------------|--------------------------|---------|--------|----------|-------------------|--------|
| C520   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          | <u>FILTER</u>     |        |
| C521   | 1-123-379-00  | ELECT                    | 0.47MF  |        |          |                   |        |
| C522   | 1-161-013-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C523   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C524   | 1-161-025-00  | CERAMIC                  | 0.1MF   |        |          |                   |        |
| C525   | 1-102-074-00  | CERAMIC                  | 0.001MF |        |          | <u>CONNECTOR</u>  |        |
| C526   | 1-161-025-00  | CERAMIC                  | 0.1MF   |        |          |                   |        |
| C527   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C528   | 1-123-306-00  | ELECT                    | 47MF    |        |          |                   |        |
| C529   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C530   | 1-161-059-00  | CERAMIC                  | 0.047MF |        |          |                   |        |
| C531   | 1-102-961-00  | CERAMIC                  | 27PF    |        |          |                   |        |
| C532   | 1-102-961-00  | CERAMIC                  | 27PF    |        |          |                   |        |
| C533   | 1-123-299-00  | ELECT                    | 1000MF  |        |          |                   |        |
| C535   | 1-123-306-00  | ELECT                    | 47MF    |        |          |                   |        |
| C536   | 1-102-129-21  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C537   | 1-102-129-21  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C538   | 1-123-308-00  | ELECT                    | 220MF   |        |          |                   |        |
| C601   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C602   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C603   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C604   | 1-123-356-00  | ELECT                    | 10MF    |        |          |                   |        |
| C701   | 1-123-306-00  | ELECT                    | 47MF    |        |          |                   |        |
| C702   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C703   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C704   | 1-102-951-00  | CERAMIC                  | 15PF    |        |          |                   |        |
| C705   | 1-102-964-00  | CERAMIC                  | 36PF    |        |          |                   |        |
| C706   | 1-102-947-00  | CERAMIC                  | 10PF    |        |          |                   |        |
| C707   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C708   | 1-102-973-00  | CERAMIC                  | 100PF   |        |          |                   |        |
| C709   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C710   | 1-101-888-00  | CERAMIC                  | 68PF    |        |          |                   |        |
| C711   | 1-102-953-00  | CERAMIC                  | 18PF    |        |          |                   |        |
| C712   | 1-102-824-00  | CERAMIC                  | 470PF   |        |          |                   |        |
| C713   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C714   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C802   | 1-101-890-00  | CERAMIC                  | 75PF    |        |          |                   |        |
| C803   | 1-101-886-00  | CERAMIC                  | 62PF    |        |          |                   |        |
| C804   | 1-102-824-00  | CERAMIC                  | 470PF   |        |          |                   |        |
| C805   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C806   | 1-102-944-00  | CERAMIC                  | 7PF     |        |          |                   |        |
| C807   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C808   | 1-102-824-00  | CERAMIC                  | 470PF   |        |          |                   |        |
| C809   | 1-102-824-00  | CERAMIC                  | 470PF   |        |          |                   |        |
| C810   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C811   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C812   | 1-102-978-00  | CERAMIC                  | 220PF   |        |          |                   |        |
| C813   | 1-123-380-00  | ELECT                    | 1MF     |        |          |                   |        |
| C814   | 1-102-949-00  | CERAMIC                  | 12PF    |        |          |                   |        |
| C815   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| C816   | 1-123-306-00  | ELECT                    | 47MF    |        |          |                   |        |
| C817   | 1-101-004-00  | CERAMIC                  | 0.01MF  |        |          |                   |        |
| CF401  | 1-231-302-00  | CERAMIC FILTER (4.27MHZ) |         |        |          | <u>FILTER</u>     |        |
| CF402  | 1-527-823-00  | FILTER, CERAMIC          |         |        |          |                   |        |
| CF501  | 1-527-823-00  | FILTER, CERAMIC          |         |        |          |                   |        |
| CN001  | *1-560-891-00 | PIN, CONNECTOR 3P        |         |        |          | <u>CONNECTOR</u>  |        |
| CN002  | *1-560-895-00 | PIN, CONNECTOR 7P        |         |        |          |                   |        |
| CN003  | *1-560-892-00 | PIN, CONNECTOR 4P        |         |        |          |                   |        |
| CN004  | *1-560-895-00 | PIN, CONNECTOR 7P        |         |        |          |                   |        |
| CN005  | *1-560-892-00 | PIN, CONNECTOR 4P        |         |        |          |                   |        |
| CN006  | *1-560-890-00 | PIN, CONNECTOR 2P        |         |        |          |                   |        |
| CN007  | *1-560-894-00 | PIN, CONNECTOR 6P        |         |        |          |                   |        |
| D101   | 8-719-000-04  | DIODE MC911              |         |        |          | <u>DIODE</u>      |        |
| D102   | 8-719-000-06  | DIODE MC921              |         |        |          |                   |        |
| D201   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D202   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D203   | 8-719-000-04  | DIODE MC911              |         |        |          |                   |        |
| D204   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D205   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D206   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D207   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D208   | 8-719-000-04  | DIODE MC911              |         |        |          |                   |        |
| D209   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D230   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D231   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D232   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D233   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D234   | 8-719-000-12  | DIODE MC931              |         |        |          |                   |        |
| D235   | 8-719-000-12  | DIODE MC931              |         |        |          |                   |        |
| D401   | 8-719-911-19  | DIODE 1SS119             |         |        |          | <u>DIODE</u>      |        |
| D501   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D502   | 8-719-175-07  | DIODE RD7.5E-8           |         |        |          |                   |        |
| D503   | 8-719-000-12  | DIODE MC931              |         |        |          |                   |        |
| D504   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D702   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D703   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D801   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| D802   | 8-719-911-19  | DIODE 1SS119             |         |        |          |                   |        |
| DL101  | 1-415-065-00  | DELAY LINE               |         |        |          | <u>DELAY LINE</u> |        |
| DL301  | 1-415-285-00  | DELAY LINE (1H)          |         |        |          |                   |        |
| FL301  | 1-235-558-11  | FILTER, LOW PASS         |         |        |          | <u>FILTER</u>     |        |
| FL401  | 1-235-550-11  | B.P.F (3.58MHZ)          |         |        |          |                   |        |

When indicating parts by reference number, please include the board name.

| Ref.No               | Part No.     | Description           | Remark | Ref.No | Part No.     | Description         | Remark |
|----------------------|--------------|-----------------------|--------|--------|--------------|---------------------|--------|
| <u>IC</u>            |              |                       |        |        |              |                     |        |
| IC101                | 8-759-101-62 | IC CX20043            |        | Q202   | 8-729-117-54 | TRANSISTOR 2SA1175  |        |
| IC301                | 8-758-662-00 | IC CX-866B            |        | Q203   | 8-729-117-54 | TRANSISTOR 2SA1175  |        |
| IC401                | 8-759-203-99 | IC CX10021B-NP        |        | Q204   | 8-729-178-55 | TRANSISTOR 2SC2785  |        |
| IC501                | 8-759-204-43 | IC CX-7989A           |        | Q205   | 8-729-117-54 | TRANSISTOR 2SA1175  |        |
| IC601                | 8-759-208-94 | IC CX-894             |        | Q206   | 8-729-117-54 | TRANSISTOR 2SA1175  |        |
| <u>COIL</u>          |              |                       |        |        |              |                     |        |
| L101                 | 1-408-418-00 | MICRO INDUCTOR 56UH   |        | Q207   | 8-729-117-54 | TRANSISTOR 2SA1175  |        |
| L102                 | 1-408-421-00 | MICRO INDUCTOR 100UH  |        | Q230   | 8-729-178-55 | TRANSISTOR 2SC2785  |        |
| L103                 | 1-408-419-00 | MICRO INDUCTOR 68UH   |        | Q231   | 8-729-178-55 | TRANSISTOR 2SC2785  |        |
| L104                 | 1-408-421-00 | MICRO INDUCTOR 100UH  |        | Q232   | 8-729-117-54 | TRANSISTOR 2SA1175  |        |
| L105                 | 1-408-422-00 | MICRO INDUCTOR 120UH  |        | Q233   | 8-729-900-89 | TRANSISTOR DTC144ES |        |
| L106                 | 1-408-421-00 | MICRO INDUCTOR 100UH  |        | Q234   | 8-729-178-55 | TRANSISTOR 2SC2785  |        |
| L107                 | 1-408-414-00 | MICRO INDUCTOR 27UH   |        | Q235   | 8-729-178-55 | TRANSISTOR 2SC2785  |        |
| L201                 | 1-408-413-00 | MICRO INDUCTOR 22UH   |        | Q236   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L230                 | 1-408-416-00 | MICRO INDUCTOR 39UH   |        | Q237   | 8-729-900-89 | TRANSISTOR DTC144ES |        |
| L231                 | 1-408-425-00 | MICRO INDUCTOR 220UH  |        | Q239   | 8-729-117-54 | TRANSISTOR 2SA1175  |        |
| L232                 | 1-408-413-00 | MICRO INDUCTOR 22UH   |        | Q240   | 8-729-117-54 | TRANSISTOR 2SA1175  |        |
| L233                 | 1-408-419-00 | MICRO INDUCTOR 68UH   |        | Q241   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L235                 | 1-408-420-00 | MICRO INDUCTOR 82UH   |        | Q242   | 8-729-900-65 | TRANSISTOR DTA144ES |        |
| L301                 | 1-408-399-00 | MICRO INDUCTOR 1.5UH  |        | Q243   | 8-729-900-89 | TRANSISTOR DTC144ES |        |
| L302                 | 1-408-399-00 | MICRO INDUCTOR 1.5UH  |        | Q246   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L401                 | 1-408-427-00 | MICRO INDUCTOR 330UH  |        | Q301   | 8-729-900-89 | TRANSISTOR DTC144ES |        |
| L402                 | 1-408-498-31 | MICRO INDUCTOR 3.3MMH |        | Q302   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L403                 | 1-408-404-00 | MICRO INDUCTOR 3.9UH  |        | Q303   | 8-729-900-65 | TRANSISTOR DTA144ES |        |
| L404                 | 1-408-425-00 | MICRO INDUCTOR 220UH  |        | Q304   | 8-729-900-89 | TRANSISTOR DTC144ES |        |
| L405                 | 1-408-426-00 | MICRO INDUCTOR 270UH  |        | Q305   | 8-729-900-89 | TRANSISTOR DTC144ES |        |
| L406                 | 1-408-426-00 | MICRO INDUCTOR 270UH  |        | Q306   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L501                 | 1-408-409-00 | MICRO INDUCTOR 10UH   |        | Q401   | 8-729-900-89 | TRANSISTOR DTC144ES |        |
| L502                 | 1-408-418-00 | MICRO INDUCTOR 56UH   |        | Q402   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L503                 | 1-408-421-00 | MICRO INDUCTOR 100UH  |        | Q404   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L504                 | 1-408-421-00 | MICRO INDUCTOR 100UH  |        | Q405   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L701                 | 1-408-414-00 | MICRO INDUCTOR 27UH   |        | Q406   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L702                 | 1-408-408-00 | MICRO INDUCTOR 8.2UH  |        | Q407   | 8-729-204-83 | TRANSISTOR 2SA1048  |        |
| L703                 | 1-408-429-00 | MICRO INDUCTOR 470UH  |        | Q501   | 8-729-900-89 | TRANSISTOR DTC144ES |        |
| L704                 | 1-408-422-00 | MICRO INDUCTOR 120UH  |        | Q502   | 8-729-900-89 | TRANSISTOR DTC144ES |        |
| L801                 | 1-408-422-00 | MICRO INDUCTOR 120UH  |        | Q503   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L802                 | 1-408-425-00 | MICRO INDUCTOR 220UH  |        | Q504   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L803                 | 1-408-411-00 | MICRO INDUCTOR 15UH   |        | Q505   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L804                 | 1-408-413-00 | MICRO INDUCTOR 22UH   |        | Q506   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L805                 | 1-408-422-00 | MICRO INDUCTOR 120UH  |        | Q507   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| L806                 | 1-408-424-00 | MICRO INDUCTOR 180UH  |        | Q508   | 8-729-204-83 | TRANSISTOR 2SA1048  |        |
| <u>VARIABLE COIL</u> |              |                       |        |        |              |                     |        |
| LV101                | 1-408-512-00 | COIL (VARIABLE)       |        | Q509   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| <u>TRANSISTOR</u>    |              |                       |        | Q510   | 8-729-204-83 | TRANSISTOR 2SA1048  |        |
| Q101                 | 8-729-900-89 | TRANSISTOR DTC144ES   |        | Q601   | 8-729-900-65 | TRANSISTOR DTA144ES |        |
| Q102                 | 8-729-900-89 | TRANSISTOR DTC144ES   |        | Q602   | 8-729-900-89 | TRANSISTOR DTC144ES |        |
| Q103                 | 8-729-900-89 | TRANSISTOR DTC144ES   |        | Q701   | 8-729-178-55 | TRANSISTOR 2SC2785  |        |
| Q104                 | 8-729-245-83 | TRANSISTOR 2SC2458    |        | Q702   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| Q201                 | 8-729-117-54 | TRANSISTOR 2SA1175    |        | Q703   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
|                      |              |                       |        | Q704   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
|                      |              |                       |        | Q705   | 8-729-204-83 | TRANSISTOR 2SA1048  |        |
|                      |              |                       |        | Q706   | 8-729-204-83 | TRANSISTOR 2SA1048  |        |
|                      |              |                       |        | Q707   | 8-729-900-89 | TRANSISTOR DTC144ES |        |
|                      |              |                       |        | Q801   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
|                      |              |                       |        | Q802   | 8-729-245-83 | TRANSISTOR 2SC2458  |        |

When indicating parts by reference number, please include the board name.



| Ref.No   | Part No.     | Description         | Remark | Ref.No | Part No.     | Description         | Remark |
|----------|--------------|---------------------|--------|--------|--------------|---------------------|--------|
| Q803     | 8-729-245-83 | TRANSISTOR 2SC2458  |        | R204   | 1-247-831-00 | CARBON 1K 5% 1/6W   |        |
| Q804     | 8-729-900-89 | TRANSISTOR DTC144ES |        | R205   | 1-247-833-00 | CARBON 1.2K 5% 1/6W |        |
| Q805     | 8-729-178-55 | TRANSISTOR 2SC2785  |        | R206   | 1-247-859-00 | CARBON 15K 5% 1/6W  |        |
| Q806     | 8-729-245-83 | TRANSISTOR 2SC2458  |        | R207   | 1-247-835-00 | CARBON 1.5K 5% 1/6W |        |
| Q807     | 8-729-178-55 | TRANSISTOR 2SC2785  |        | R208   | 1-247-869-00 | CARBON 39K 5% 1/6W  |        |
| Q808     | 8-729-900-89 | TRANSISTOR DTC144ES |        | R209   | 1-247-799-00 | CARBON 47 5% 1/6W   |        |
| RESISTOR |              |                     |        | R210   | 1-247-861-00 | CARBON 18K 5% 1/6W  |        |
| R101     | 1-247-891-00 | CARBON 330K 5% 1/6W |        | R211   | 1-247-857-00 | CARBON 12K 5% 1/6W  |        |
| R102     | 1-247-847-00 | CARBON 4.7K 5% 1/6W |        | R212   | 1-247-851-00 | CARBON 6.8K 5% 1/6W |        |
| R103     | 1-247-858-00 | CARBON 13K 5% 1/6W  |        | R213   | 1-249-421-11 | CARBON 2.2K 5% 1/6W |        |
| R104     | 1-247-863-00 | CARBON 22K 5% 1/6W  |        | R214   | 1-247-838-00 | CARBON 2K 5% 1/6W   |        |
| R105     | 1-247-857-00 | CARBON 12K 5% 1/6W  |        | R215   | 1-247-817-00 | CARBON 270 5% 1/6W  |        |
| R106     | 1-247-831-00 | CARBON 1K 5% 1/6W   |        | R216   | 1-247-822-00 | CARBON 430 5% 1/6W  |        |
| R107     | 1-247-833-00 | CARBON 1.2K 5% 1/6W |        | R217   | 1-247-832-00 | CARBON 1.1K 5% 1/6W |        |
| R108     | 1-247-831-00 | CARBON 1K 5% 1/6W   |        | R218   | 1-247-813-00 | CARBON 180 5% 1/6W  |        |
| R109     | 1-247-841-00 | CARBON 2.7K 5% 1/6W |        | R219   | 1-247-856-00 | CARBON 11K 5% 1/6W  |        |
| R110     | 1-247-861-00 | CARBON 18K 5% 1/6W  |        | R220   | 1-247-856-00 | CARBON 11K 5% 1/6W  |        |
| R111     | 1-249-421-11 | CARBON 2.2K 5% 1/6W |        | R221   | 1-247-813-00 | CARBON 180 5% 1/6W  |        |
| R112     | 1-247-841-00 | CARBON 2.7K 5% 1/6W |        | R222   | 1-247-895-00 | CARBON 470K 5% 1/6W |        |
| R113     | 1-247-857-00 | CARBON 12K 5% 1/6W  |        | R223   | 1-247-831-00 | CARBON 1K 5% 1/6W   |        |
| R114     | 1-247-899-00 | CARBON 680K 5% 1/6W |        | R224   | 1-247-855-00 | CARBON 10K 5% 1/6W  |        |
| R116     | 1-247-861-00 | CARBON 18K 5% 1/6W  |        | R225   | 1-247-864-00 | CARBON 24K 5% 1/6W  |        |
| R117     | 1-247-883-00 | CARBON 150K 5% 1/6W |        | R226   | 1-247-817-00 | CARBON 270 5% 1/6W  |        |
| R118     | 1-247-855-00 | CARBON 10K 5% 1/6W  |        | R227   | 1-247-851-00 | CARBON 6.8K 5% 1/6W |        |
| R119     | 1-247-851-00 | CARBON 6.8K 5% 1/6W |        | R228   | 1-247-847-00 | CARBON 4.7K 5% 1/6W |        |
| R120     | 1-247-815-00 | CARBON 220 5% 1/6W  |        | R230   | 1-247-819-00 | CARBON 330 5% 1/6W  |        |
| R121     | 1-247-827-00 | CARBON 680 5% 1/6W  |        | R231   | 1-247-831-00 | CARBON 1K 5% 1/6W   |        |
| R122     | 1-247-891-00 | CARBON 330K 5% 1/6W |        | R232   | 1-247-861-00 | CARBON 18K 5% 1/6W  |        |
| R123     | 1-247-827-00 | CARBON 680 5% 1/6W  |        | R233   | 1-247-861-00 | CARBON 18K 5% 1/6W  |        |
| R124     | 1-247-843-00 | CARBON 3.3K 5% 1/6W |        | R234   | 1-247-829-00 | CARBON 820 5% 1/6W  |        |
| R125     | 1-247-855-00 | CARBON 10K 5% 1/6W  |        | R235   | 1-247-865-00 | CARBON 27K 5% 1/6W  |        |
| R126     | 1-247-859-00 | CARBON 15K 5% 1/6W  |        | R236   | 1-247-855-00 | CARBON 10K 5% 1/6W  |        |
| R127     | 1-247-799-00 | CARBON 47 5% 1/6W   |        | R237   | 1-247-797-00 | CARBON 39 5% 1/6W   |        |
| R128     | 1-247-879-00 | CARBON 100K 5% 1/6W |        | R238   | 1-247-831-00 | CARBON 1K 5% 1/6W   |        |
| R129     | 1-247-831-00 | CARBON 1K 5% 1/6W   |        | R239   | 1-247-822-00 | CARBON 430 5% 1/6W  |        |
| R130     | 1-249-421-11 | CARBON 2.2K 5% 1/6W |        | R240   | 1-247-863-00 | CARBON 22K 5% 1/6W  |        |
| R131     | 1-247-883-00 | CARBON 150K 5% 1/6W |        | R241   | 1-247-859-00 | CARBON 15K 5% 1/6W  |        |
| R132     | 1-247-829-00 | CARBON 820 5% 1/6W  |        | R242   | 1-247-834-00 | CARBON 1.3K 5% 1/6W |        |
| R133     | 1-247-835-00 | CARBON 1.5K 5% 1/6W |        | R243   | 1-247-822-00 | CARBON 430 5% 1/6W  |        |
| R134     | 1-247-852-00 | CARBON 7.5K 5% 1/6W |        | R244   | 1-247-823-00 | CARBON 470 5% 1/6W  |        |
| R135     | 1-247-883-00 | CARBON 150K 5% 1/6W |        | R245   | 1-247-823-00 | CARBON 470 5% 1/6W  |        |
| R136     | 1-247-867-00 | CARBON 33K 5% 1/6W  |        | R246   | 1-247-819-00 | CARBON 330 5% 1/6W  |        |
| R137     | 1-247-831-00 | CARBON 1K 5% 1/6W   |        | R247   | 1-247-819-00 | CARBON 330 5% 1/6W  |        |
| R138     | 1-247-826-00 | CARBON 620 5% 1/6W  |        | R248   | 1-247-856-00 | CARBON 11K 5% 1/6W  |        |
| R139     | 1-247-837-00 | CARBON 1.8K 5% 1/6W |        | R249   | 1-247-856-00 | CARBON 11K 5% 1/6W  |        |
| R140     | 1-249-421-11 | CARBON 2.2K 5% 1/6W |        | R250   | 1-247-831-00 | CARBON 1K 5% 1/6W   |        |
| R141     | 1-247-861-00 | CARBON 18K 5% 1/6W  |        | R251   | 1-247-829-00 | CARBON 820 5% 1/6W  |        |
| R142     | 1-247-861-00 | CARBON 18K 5% 1/6W  |        | R252   | 1-247-885-00 | CARBON 180K 5% 1/6W |        |
| R143     | 1-247-831-00 | CARBON 1K 5% 1/6W   |        | R253   | 1-247-813-00 | CARBON 180 5% 1/6W  |        |
| R144     | 1-247-855-00 | CARBON 10K 5% 1/6W  |        | R254   | 1-247-829-00 | CARBON 820 5% 1/6W  |        |
| R202     | 1-247-835-00 | CARBON 1.5K 5% 1/6W |        | R255   | 1-247-815-00 | CARBON 220 5% 1/6W  |        |
| R203     | 1-247-821-00 | CARBON 390 5% 1/6W  |        | R256   | 1-247-813-00 | CARBON 180 5% 1/6W  |        |
|          |              |                     |        | R257   | 1-247-817-00 | CARBON 270 5% 1/6W  |        |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No.     | Description | Remark       | Ref.No                     | Part No.      | Description         | Remark       |
|--------|--------------|-------------|--------------|----------------------------|---------------|---------------------|--------------|
| R258   | 1-247-803-00 | CARBON      | 68 5% 1/6W   | R406                       | 1-247-863-00  | CARBON              | 22K 5% 1/6W  |
| R259   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R407                       | 1-247-807-00  | CARBON              | 100 5% 1/6W  |
| R260   | 1-247-835-00 | CARBON      | 1.5K 5% 1/6W | R408                       | 1-247-835-00  | CARBON              | 1.5K 5% 1/6W |
| R261   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | R409                       | 1-249-421-11  | CARBON              | 2.2K 5% 1/6W |
| R262   | 1-247-827-00 | CARBON      | 680 5% 1/6W  | R410                       | 1-247-891-00  | CARBON              | 330K 5% 1/6W |
| R263   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | R411                       | 1-247-831-00  | CARBON              | 1K 5% 1/6W   |
| R264   | 1-247-827-00 | CARBON      | 680 5% 1/6W  | R412                       | 1-247-879-00  | CARBON              | 100K 5% 1/6W |
| R265   | 1-247-823-00 | CARBON      | 470 5% 1/6W  | R413                       | 1-247-829-00  | CARBON              | 820 5% 1/6W  |
| R266   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | R414                       | 1-247-883-00  | CARBON              | 150K 5% 1/6W |
| R267   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  | R415                       | 1-247-891-00  | CARBON              | 330K 5% 1/6W |
| R268   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R416                       | 1-247-855-00  | CARBON              | 10K 5% 1/6W  |
| R269   | 1-247-825-00 | CARBON      | 560 5% 1/6W  | R417                       | 1-247-861-00  | CARBON              | 18K 5% 1/6W  |
| R270   | 1-247-811-00 | CARBON      | 150 5% 1/6W  | R418                       | 1-249-421-11  | CARBON              | 2.2K 5% 1/6W |
| R271   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  | R419                       | 1-247-843-00  | CARBON              | 3.3K 5% 1/6W |
| R272   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  | R420                       | 1-247-883-00  | CARBON              | 150K 5% 1/6W |
| R273   | 1-247-809-00 | CARBON      | 120 5% 1/6W  | R421                       | 1-247-885-00  | CARBON              | 180K 5% 1/6W |
| R274   | 1-247-817-00 | CARBON      | 270 5% 1/6W  | R422                       | 1-247-831-00  | CARBON              | 1K 5% 1/6W   |
| R277   | 1-247-783-00 | CARBON      | 10 5% 1/6W   | R423                       | 1-247-845-00  | CARBON              | 3.9K 5% 1/6W |
| R278   | 1-247-861-00 | CARBON      | 18K 5% 1/6W  | R424                       | 1-247-831-00  | CARBON              | 1K 5% 1/6W   |
| R280   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | R425                       | 1-247-835-00  | CARBON              | 1.5K 5% 1/6W |
| R281   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W | R426                       | 1-247-835-00  | CARBON              | 1.5K 5% 1/6W |
| R282   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  | R427                       | 1-247-879-00  | CARBON              | 100K 5% 1/6W |
| R301   | 1-247-825-00 | CARBON      | 560 5% 1/6W  | R428                       | 1-247-813-00  | CARBON              | 180 5% 1/6W  |
| R302   | 1-247-821-00 | CARBON      | 390 5% 1/6W  | R429                       | 1-247-845-00  | CARBON              | 3.9K 5% 1/6W |
| R303   | 1-247-825-00 | CARBON      | 560 5% 1/6W  | R430                       | 1-247-871-00  | CARBON              | 47K 5% 1/6W  |
| R304   | 1-247-833-00 | CARBON      | 1.2K 5% 1/6W | R431                       | 1-247-845-00  | CARBON              | 3.9K 5% 1/6W |
| R305   | 1-247-865-00 | CARBON      | 27K 5% 1/6W  | R432                       | 1-249-421-11  | CARBON              | 2.2K 5% 1/6W |
| R306   | 1-247-871-00 | CARBON      | 47K 5% 1/6W  | R433                       | 1-247-871-00  | CARBON              | 47K 5% 1/6W  |
| R307   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  | R434                       | 1-247-824-00  | CARBON              | 510 5% 1/6W  |
| R308   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R435                       | 1-247-831-00  | CARBON              | 1K 5% 1/6W   |
| R309   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R436                       | 1-247-819-00  | CARBON              | 330 5% 1/6W  |
| R310   | 1-247-825-00 | CARBON      | 560 5% 1/6W  | R437                       | 1-247-843-00  | CARBON              | 3.3K 5% 1/6W |
| R311   | 1-247-828-00 | CARBON      | 750 5% 1/6W  | R438                       | 1-247-833-00  | CARBON              | 1.2K 5% 1/6W |
| R312   | 1-247-841-00 | CARBON      | 2.7K 5% 1/6W | R440                       | 1-247-656-00  | CARBON              | 18 5% 1/4W F |
| R313   | 1-247-835-00 | CARBON      | 1.5K 5% 1/6W | R441                       | 1-247-843-00  | CARBON              | 3.3K 5% 1/6W |
| R314   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R442                       | 1-247-855-00  | CARBON              | 10K 5% 1/6W  |
| R315   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R443                       | 1-247-863-00  | CARBON              | 22K 5% 1/6W  |
| R316   | 1-247-849-00 | CARBON      | 5.6K 5% 1/6W | R444                       | 1-247-865-00  | CARBON              | 27K 5% 1/6W  |
| R317   | 1-247-811-00 | CARBON      | 150 5% 1/6W  | R445                       | 1-247-833-00  | CARBON              | 1.2K 5% 1/6W |
| R318   | 1-247-811-00 | CARBON      | 150 5% 1/6W  | <b>R446 A 1-247-833-00</b> | <b>CARBON</b> | <b>1.2K 5% 1/6W</b> |              |
| R319   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R447                       | 1-247-867-00  | CARBON              | 33K 5% 1/6W  |
| R320   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R448                       | 1-247-867-00  | CARBON              | 33K 5% 1/6W  |
| R321   | 1-247-813-00 | CARBON      | 180 5% 1/6W  | R449                       | 1-247-843-00  | CARBON              | 3.3K 5% 1/6W |
| R322   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R450                       | 1-247-819-00  | CARBON              | 330 5% 1/6W  |
| R323   | 1-247-827-00 | CARBON      | 680 5% 1/6W  | R451                       | 1-247-819-00  | CARBON              | 330 5% 1/6W  |
| R324   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R452                       | 1-247-835-00  | CARBON              | 1.5K 5% 1/6W |
| R325   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R501                       | 1-247-867-00  | CARBON              | 33K 5% 1/6W  |
| R326   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R504                       | 1-247-821-00  | CARBON              | 390 5% 1/6W  |
| R401   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R505                       | 1-247-815-00  | CARBON              | 220 5% 1/6W  |
| R402   | 1-247-827-00 | CARBON      | 680 5% 1/6W  | R506                       | 1-247-831-00  | CARBON              | 1K 5% 1/6W   |
| R403   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | R507                       | 1-247-821-00  | CARBON              | 390 5% 1/6W  |
| R404   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W | R508                       | 1-247-871-00  | CARBON              | 47K 5% 1/6W  |
| R405   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W | R509                       | 1-247-861-00  | CARBON              | 18K 5% 1/6W  |

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No.     | Description | Remark       | Ref.No                   | Part No.     | Description      | Remark       |
|--------|--------------|-------------|--------------|--------------------------|--------------|------------------|--------------|
| R510   | 1-247-853-00 | CARBON      | 8.2K 5% 1/6W | R723                     | 1-247-853-00 | CARBON           | 8.2K 5% 1/6W |
| R511   | 1-247-809-00 | CARBON      | 120 5% 1/6W  | R724                     | 1-247-841-00 | CARBON           | 2.7K 5% 1/6W |
| R512   | 1-247-837-00 | CARBON      | 1.8K 5% 1/6W | R725                     | 1-247-823-00 | CARBON           | 470 5% 1/6W  |
| R513   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | R726                     | 1-247-855-00 | CARBON           | 10K 5% 1/6W  |
| R515   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R801                     | 1-247-865-00 | CARBON           | 27K 5% 1/6W  |
| R516   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R802                     | 1-247-807-00 | CARBON           | 100 5% 1/6W  |
| R517   | 1-247-803-00 | CARBON      | 68 5% 1/6W   | R803                     | 1-247-861-00 | CARBON           | 18K 5% 1/6W  |
| R518   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R804                     | 1-247-843-00 | CARBON           | 3.3K 5% 1/6W |
| R519   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | R805                     | 1-247-829-00 | CARBON           | 820 5% 1/6W  |
| R520   | 1-247-881-00 | CARBON      | 120K 5% 1/6W | R806                     | 1-247-809-00 | CARBON           | 120 5% 1/6W  |
| R521   | 1-247-901-00 | CARBON      | 820K 5% 1/6W | R807                     | 1-247-855-00 | CARBON           | 10K 5% 1/6W  |
| R522   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  | R809                     | 1-247-831-00 | CARBON           | 1K 5% 1/6W   |
| R523   | 1-247-869-00 | CARBON      | 39K 5% 1/6W  | R810                     | 1-247-861-00 | CARBON           | 18K 5% 1/6W  |
| R524   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R811                     | 1-247-863-00 | CARBON           | 22K 5% 1/6W  |
| R525   | 1-247-841-00 | CARBON      | 2.7K 5% 1/6W | R812                     | 1-247-865-00 | CARBON           | 27K 5% 1/6W  |
| R526   | 1-247-823-00 | CARBON      | 470 5% 1/6W  | R813                     | 1-247-825-00 | CARBON           | 560 5% 1/6W  |
| R527   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W | R814                     | 1-247-867-00 | CARBON           | 33K 5% 1/6W  |
| R529   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R815                     | 1-247-867-00 | CARBON           | 33K 5% 1/6W  |
| R530   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R816                     | 1-247-812-00 | CARBON           | 160 5% 1/6W  |
| R531   | 1-247-807-00 | CARBON      | 100 5% 1/6W  | R817                     | 1-249-421-11 | CARBON           | 2.2K 5% 1/6W |
| R532   | 1-247-823-00 | CARBON      | 470 5% 1/6W  | R818                     | 1-247-827-00 | CARBON           | 680 5% 1/6W  |
| R533   | 1-247-803-00 | CARBON      | 68 5% 1/6W   | R819                     | 1-247-821-00 | CARBON           | 390 5% 1/6W  |
| R534   | 1-247-823-00 | CARBON      | 470 5% 1/6W  | R820                     | 1-247-815-00 | CARBON           | 220 5% 1/6W  |
| R535   | 1-247-807-00 | CARBON      | 100 5% 1/6W  | R821                     | 1-247-797-00 | CARBON           | 39 5% 1/6W   |
| R536   | 1-247-817-00 | CARBON      | 270 5% 1/6W  | R822                     | 1-247-815-00 | CARBON           | 220 5% 1/6W  |
| R537   | 1-247-877-00 | CARBON      | 82K 5% 1/6W  | R823                     | 1-247-843-00 | CARBON           | 3.3K 5% 1/6W |
| R538   | 1-247-887-00 | CARBON      | 220K 5% 1/6W | R824                     | 1-247-847-00 | CARBON           | 4.7K 5% 1/6W |
| R539   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R825                     | 1-247-845-00 | CARBON           | 3.9K 5% 1/6W |
| R601   | 1-247-823-00 | CARBON      | 470 5% 1/6W  | R826                     | 1-247-823-00 | CARBON           | 470 5% 1/6W  |
| R602   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R827                     | 1-247-823-00 | CARBON           | 470 5% 1/6W  |
| R603   | 1-247-823-00 | CARBON      | 470 5% 1/6W  | R828                     | 1-247-821-00 | CARBON           | 390 5% 1/6W  |
| R701   | 1-247-865-00 | CARBON      | 27K 5% 1/6W  | <u>VARIABLE RESISTOR</u> |              |                  |              |
| R702   | 1-247-823-00 | CARBON      | 470 5% 1/6W  | RV101                    | 1-228-989-00 | RES, ADJ, CARBON | 470          |
| R703   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  | RV102                    | 1-228-996-00 | RES, ADJ, CARBON | 47K          |
| R704   | 1-247-833-00 | CARBON      | 1.2K 5% 1/6W | RV201                    | 1-228-993-00 | RES, ADJ, CARBON | 4.7K         |
| R705   | 1-247-823-00 | CARBON      | 470 5% 1/6W  | RV202                    | 1-228-989-00 | RES, ADJ, CARBON | 470          |
| R706   | 1-247-823-00 | CARBON      | 470 5% 1/6W  | RV203                    | 1-228-994-00 | RES, ADJ, CARBON | 10K          |
| R707   | 1-247-807-00 | CARBON      | 100 5% 1/6W  | RV230                    | 1-228-991-00 | RES, ADJ, CARBON | 2.2K         |
| R708   | 1-247-825-00 | CARBON      | 560 5% 1/6W  | RV231                    | 1-228-989-00 | RES, ADJ, CARBON | 470          |
| R709   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  | RV301                    | 1-228-994-00 | RES, ADJ, CARBON | 10K          |
| R710   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  | RV401                    | 1-228-991-00 | RES, ADJ, CARBON | 2.2K         |
| R711   | 1-247-853-00 | CARBON      | 8.2K 5% 1/6W | RV402                    | 1-228-996-00 | RES, ADJ, CARBON | 47K          |
| R712   | 1-247-825-00 | CARBON      | 560 5% 1/6W  | RV403                    | 1-228-994-00 | RES, ADJ, CARBON | 10K          |
| R713   | 1-247-871-00 | CARBON      | 47K 5% 1/6W  | RV404                    | 1-228-990-00 | RES, ADJ, CARBON | 1K           |
| R714   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | RV502                    | 1-228-995-00 | RES, ADJ, CARBON | 22K          |
| R715   | 1-247-833-00 | CARBON      | 1.2K 5% 1/6W | RV503                    | 1-228-995-00 | RES, ADJ, CARBON | 22K          |
| R716   | 1-247-819-00 | CARBON      | 330 5% 1/6W  | RV504                    | 1-228-995-00 | RES, ADJ, CARBON | 22K          |
| R717   | 1-247-871-00 | CARBON      | 47K 5% 1/6W  | RV701                    | 1-228-990-00 | RES, ADJ, CARBON | 1K           |
| R718   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | <u>TRANSFORMER</u>       |              |                  |              |
| R719   | 1-247-821-00 | CARBON      | 390 5% 1/6W  | T101                     | 1-426-141-00 | COIL (EQT)       |              |
| R720   | 1-247-813-00 | CARBON      | 180 5% 1/6W  |                          |              |                  |              |
| R721   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  |                          |              |                  |              |
| R722   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  |                          |              |                  |              |

When indicating parts by reference number, please include the board name.

| Ref.No                                    | Part No.     | Description      | Remark     | Ref.No | Part No.     | Description      | Remark   |
|-------------------------------------------|--------------|------------------|------------|--------|--------------|------------------|----------|
| <u>CRYSTAL</u>                            |              |                  |            |        |              |                  |          |
| X401                                      | 1-527-396-00 | CRYSTAL OSC      |            | C050   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| *****                                     |              |                  |            | C051   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| *A-6713-225-A AU-8 BOARD, COMPLETE        |              |                  |            | C053   | 1-123-330-00 | ELECT 22MF       | 20% 16V  |
| *****                                     |              |                  |            | C054   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| *X-3684-321-1 CASE (2) ASSY, SHIELD, AU   |              |                  |            | C056   | 1-123-382-00 | ELECT 3.3MF      | 20% 50V  |
| *3-684-387-01 CASE (2) (MAIN), SHIELD, AU |              |                  |            | C057   | 1-123-382-00 | ELECT 3.3MF      | 20% 50V  |
| *3-684-389-02 LID, AU SHIELD CASE (2)     |              |                  |            | C058   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
|                                           |              |                  |            | C059   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
|                                           |              |                  |            | C060   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
|                                           |              |                  |            | C061   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| <u>CAPACITOR</u>                          |              |                  |            | C063   | 1-123-356-00 | ELECT 10MF       | 20% 25V  |
| C001                                      | 1-102-973-00 | CERAMIC 100PF    | 5% 50V     | C064   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C002                                      | 1-101-003-00 | CERAMIC 0.0047MF | 50V        | C065   | 1-123-333-00 | ELECT 100MF      | 20% 25V  |
| C003                                      | 1-101-003-00 | CERAMIC 0.0047MF | 50V        | C066   | 1-101-001-00 | CERAMIC 0.001MF  | 50V      |
| C004                                      | 1-123-330-00 | ELECT 22MF       | 20% 16V    | C067   | 1-123-309-00 | ELECT 330MF      | 20% 6.3V |
| C005                                      | 1-130-504-51 | MYLAR 0.001MF    | 10% 50V    | C099   | 1-123-306-00 | ELECT 47MF       | 20% 10V  |
| C006                                      | 1-130-029-00 | MYLAR 0.0082MF   | 10% 50V    | C103   | 1-123-330-00 | ELECT 22MF       | 20% 16V  |
| C007                                      | 1-136-147-00 | MYLAR 0.0033MF   | 10% 50V    | C104   | 1-130-497-00 | MYLAR 0.15MF     | 10% 50V  |
| C008                                      | 1-102-824-00 | CERAMIC 470PF    | 5% 50V     | C105   | 1-130-497-00 | MYLAR 0.15MF     | 10% 50V  |
| C009                                      | 1-123-356-00 | ELECT 10MF       | 20% 25V    | C106   | 1-123-330-00 | ELECT 22MF       | 20% 16V  |
| C010                                      | 1-123-356-00 | ELECT 10MF       | 20% 25V    | C107   | 1-123-330-00 | ELECT 22MF       | 20% 16V  |
| C011                                      | 1-101-003-00 | CERAMIC 0.0047MF | 50V        | C108   | 1-123-330-00 | ELECT 22MF       | 20% 16V  |
| C012                                      | 1-101-003-00 | CERAMIC 0.0047MF | 50V        | C110   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C013                                      | 1-123-318-00 | ELECT 33MF       | 20% 16V    | C111   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C014                                      | 1-101-003-00 | CERAMIC 0.0047MF | 50V        | C112   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C015                                      | 1-101-003-00 | CERAMIC 0.0047MF | 50V        | C113   | 1-123-330-00 | ELECT 22MF       | 20% 16V  |
| C016                                      | 1-101-003-00 | CERAMIC 0.0047MF | 50V        | C114   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C017                                      | 1-101-003-00 | CERAMIC 0.0047MF | 50V        | C115   | 1-123-330-00 | ELECT 22MF       | 20% 16V  |
| C018                                      | 1-102-973-00 | CERAMIC 100PF    | 5% 50V     | C116   | 1-123-330-00 | ELECT 22MF       | 20% 16V  |
| C019                                      | 1-123-330-00 | ELECT 22MF       | 20% 16V    | C201   | 1-102-973-00 | CERAMIC 100PF    | 5% 50V   |
| C024                                      | 1-123-307-00 | ELECT 100MF      | 20% 10V    | C202   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C026                                      | 1-123-356-00 | ELECT 10MF       | 20% 25V    | C203   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C027                                      | 1-101-003-00 | CERAMIC 0.0047MF | 50V        | C204   | 1-123-330-00 | ELECT 22MF       | 20% 16V  |
| C028                                      | 1-123-307-00 | ELECT 100MF      | 20% 10V    | C205   | 1-130-504-51 | MYLAR 0.001MF    | 10% 50V  |
| C029                                      | 1-123-318-00 | ELECT 33MF       | 20% 16V    | C206   | 1-130-029-00 | MYLAR 0.0082MF   | 10% 50V  |
| C030                                      | 1-123-318-00 | ELECT 33MF       | 20% 16V    | C207   | 1-136-147-00 | MYLAR 0.0033MF   | 10% 50V  |
| C031                                      | 1-102-958-00 | CERAMIC 20PF     | 5% 50V     | C208   | 1-102-824-00 | CERAMIC 470PF    | 5% 50V   |
| C032                                      | 1-130-485-00 | MYLAR 0.015MF    | 5% 50V     | C209   | 1-123-356-00 | ELECT 10MF       | 20% 25V  |
| C033                                      | 1-102-936-00 | CERAMIC 3PF      | 0.25PF 50V | C210   | 1-123-356-00 | ELECT 10MF       | 20% 25V  |
| C034                                      | 1-130-485-00 | MYLAR 0.015MF    | 5% 50V     | C211   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C035                                      | 1-130-498-00 | MYLAR 0.18MF     | 5% 50V     | C212   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C036                                      | 1-130-491-00 | MYLAR 0.047MF    | 5% 50V     | C213   | 1-123-318-00 | ELECT 33MF       | 20% 16V  |
| C037                                      | 1-130-469-00 | MYLAR 680PF      | 5% 50V     | C214   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C038                                      | 1-102-936-00 | CERAMIC 3PF      | 0.25PF 50V | C215   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C039                                      | 1-130-475-00 | MYLAR 0.0022MF   | 5% 50V     | C216   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C040                                      | 1-130-493-00 | MYLAR 0.068MF    | 5% 50V     | C217   | 1-101-003-00 | CERAMIC 0.0047MF | 50V      |
| C041                                      | 1-130-485-00 | MYLAR 0.015MF    | 5% 50V     | C218   | 1-102-973-00 | CERAMIC 100PF    | 5% 50V   |
| C042                                      | 1-123-380-00 | ELECT 1MF        | 20% 50V    | C219   | 1-123-330-00 | ELECT 22MF       | 20% 16V  |
| C043                                      | 1-123-356-00 | ELECT 10MF       | 20% 25V    | C220   | 1-136-165-00 | MYLAR 0.1MF      | 10% 50V  |
| C046                                      | 1-123-356-00 | ELECT 10MF       | 20% 25V    | C221   | 1-123-381-00 | ELECT 2.2MF      | 20% 50V  |
| C047                                      | 1-123-356-00 | ELECT 10MF       | 20% 25V    | C222   | 1-130-483-00 | MYLAR 0.01MF     | 5% 50V   |
|                                           |              |                  |            | C223   | 1-130-504-51 | MYLAR 0.001MF    | 10% 50V  |
|                                           |              |                  |            | C226   | 1-123-356-00 | ELECT 10MF       | 20% 25V  |

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| Ref.No | Part No.     | Description |          |        | Remark | Ref.No | Part No.     | Description |          |     | Remark |
|--------|--------------|-------------|----------|--------|--------|--------|--------------|-------------|----------|-----|--------|
| C227   | 1-101-003-00 | CERAMIC     | 0.0047MF |        | 50V    | C611   | 1-161-059-00 | CERAMIC     | 0.047MF  | 10% | 25V    |
| C228   | 1-123-307-00 | ELECT       | 100MF    | 20%    | 10V    | C614   | 1-161-059-00 | CERAMIC     | 0.047MF  | 10% | 25V    |
| C229   | 1-123-318-00 | ELECT       | 33MF     | 20%    | 16V    | C615   | 1-123-307-00 | ELECT       | 100MF    | 20% | 10V    |
| C230   | 1-123-318-00 | ELECT       | 33MF     | 20%    | 16V    | C616   | 1-123-356-00 | ELECT       | 10MF     | 20% | 25V    |
| C231   | 1-102-958-00 | CERAMIC     | 20PF     | 5%     | 50V    | C617   | 1-123-356-00 | ELECT       | 10MF     | 20% | 25V    |
| C232   | 1-130-485-00 | MYLAR       | 0.015MF  | 5%     | 50V    | C618   | 1-161-013-00 | CERAMIC     | 0.01MF   | 10% | 25V    |
| C233   | 1-102-936-00 | CERAMIC     | 3PF      | 0.25PF | 50V    | C619   | 1-161-013-00 | CERAMIC     | 0.01MF   | 10% | 25V    |
| C234   | 1-130-485-00 | MYLAR       | 0.015MF  | 5%     | 50V    | C621   | 1-162-306-31 | CERAMIC     | 0.01MF   | 30% | 16V    |
| C235   | 1-130-498-00 | MYLAR       | 0.18MF   | 5%     | 50V    | C700   | 1-102-824-00 | CERAMIC     | 470PF    | 5%  | 50V    |
| C236   | 1-130-491-00 | MYLAR       | 0.047MF  | 5%     | 50V    | C701   | 1-123-356-00 | ELECT       | 10MF     | 20% | 25V    |
| C237   | 1-130-469-00 | MYLAR       | 680PF    | 5%     | 50V    | C702   | 1-101-880-00 | CERAMIC     | 47PF     | 5%  | 50V    |
| C238   | 1-102-936-00 | CERAMIC     | 3PF      | 0.25PF | 50V    | C704   | 1-123-356-00 | ELECT       | 10MF     | 20% | 25V    |
| C239   | 1-130-475-00 | MYLAR       | 0.0022MF | 5%     | 50V    | C708   | 1-123-318-00 | ELECT       | 33MF     | 20% | 16V    |
| C240   | 1-130-493-00 | MYLAR       | 0.068MF  | 5%     | 50V    | C710   | 1-123-332-00 | ELECT       | 47MF     | 20% | 25V    |
| C241   | 1-130-485-00 | MYLAR       | 0.015MF  | 5%     | 50V    | C711   | 1-102-976-00 | CERAMIC     | 180PF    | 5%  | 50V    |
| C242   | 1-123-380-00 | ELECT       | 1MF      | 20%    | 50V    | C800   | 1-102-824-00 | CERAMIC     | 470PF    | 5%  | 50V    |
| C243   | 1-123-356-00 | ELECT       | 10MF     | 20%    | 25V    | C801   | 1-123-356-00 | ELECT       | 10MF     | 20% | 25V    |
| C244   | 1-101-003-00 | CERAMIC     | 0.0047MF |        | 50V    | C802   | 1-101-880-00 | CERAMIC     | 47PF     | 5%  | 50V    |
| C245   | 1-123-330-00 | ELECT       | 22MF     | 20%    | 16V    | C803   | 1-123-356-00 | ELECT       | 10MF     | 20% | 25V    |
| C246   | 1-123-356-00 | ELECT       | 10MF     | 20%    | 25V    | C804   | 1-123-356-00 | ELECT       | 10MF     | 20% | 25V    |
| C247   | 1-123-356-00 | ELECT       | 10MF     | 20%    | 25V    | C808   | 1-123-318-00 | ELECT       | 33MF     | 20% | 16V    |
| C250   | 1-101-003-00 | CERAMIC     | 0.0047MF |        | 50V    | C810   | 1-123-332-00 | ELECT       | 47MF     | 20% | 25V    |
| C251   | 1-101-003-00 | CERAMIC     | 0.0047MF |        | 50V    | C811   | 1-102-976-00 | CERAMIC     | 180PF    | 5%  | 50V    |
| C253   | 1-123-330-00 | ELECT       | 22MF     | 20%    | 16V    | C900   | 1-161-059-00 | CERAMIC     | 0.047MF  | 10% | 25V    |
| C254   | 1-101-003-00 | CERAMIC     | 0.0047MF |        | 50V    | C902   | 1-123-380-00 | ELECT       | 1MF      | 20% | 50V    |
| C256   | 1-123-382-00 | ELECT       | 3.3MF    | 20%    | 50V    | C903   | 1-123-356-00 | ELECT       | 10MF     | 20% | 25V    |
| C257   | 1-123-382-00 | ELECT       | 3.3MF    | 20%    | 50V    | C904   | 1-123-306-00 | ELECT       | 47MF     | 20% | 10V    |
| C258   | 1-101-003-00 | CERAMIC     | 0.0047MF |        | 50V    | C905   | 1-130-481-00 | MYLAR       | 0.0068MF | 5%  | 50V    |
| C259   | 1-101-003-00 | CERAMIC     | 0.0047MF |        | 50V    | C906   | 1-130-482-00 | MYLAR       | 0.0082MF | 5%  | 50V    |
| C260   | 1-101-003-00 | CERAMIC     | 0.0047MF |        | 50V    | C907   | 1-136-165-00 | MYLAR       | 0.1MF    | 10% | 50V    |
| C261   | 1-101-003-00 | CERAMIC     | 0.0047MF |        | 50V    | C908   | 1-123-356-00 | ELECT       | 10MF     | 20% | 25V    |
| C263   | 1-123-356-00 | ELECT       | 10MF     | 20%    | 25V    | C909   | 1-123-380-00 | ELECT       | 1MF      | 20% | 50V    |
| C299   | 1-123-306-00 | ELECT       | 47MF     | 20%    | 10V    | C910   | 1-123-330-00 | ELECT       | 22MF     | 20% | 16V    |
| C401   | 1-130-512-00 | MYLAR       | 0.0047MF | 10%    | 50V    | C912   | 1-123-306-00 | ELECT       | 47MF     | 20% | 10V    |
| C402   | 1-130-476-00 | MYLAR       | 0.0027MF | 5%     | 50V    | C913   | 1-130-472-00 | MYLAR       | 0.0012MF | 5%  | 50V    |
| C403   | 1-123-356-00 | ELECT       | 10MF     | 20%    | 16V    | C914   | 1-102-980-00 | CERAMIC     | 270PF    | 5%  | 50V    |
| C404   | 1-130-476-00 | MYLAR       | 0.0027MF | 5%     | 50V    | C915   | 1-102-816-00 | CERAMIC     | 120PF    | 5%  | 50V    |
| C405   | 1-130-471-00 | MYLAR       | 0.001MF  | 5%     | 50V    | C916   | 1-123-380-00 | ELECT       | 1MF      | 20% | 50V    |
| C406   | 1-130-471-00 | MYLAR       | 0.001MF  | 5%     | 50V    | C917   | 1-130-474-00 | MYLAR       | 0.0018MF | 5%  | 50V    |
| C410   | 1-123-308-00 | ELECT       | 220MF    | 20%    | 6.3V   | C918   | 1-123-306-00 | ELECT       | 47MF     | 20% | 10V    |
| C421   | 1-123-356-00 | ELECT       | 10MF     | 20%    | 25V    | C919   | 1-130-486-51 | MYLAR       | 0.018MF  | 5%  | 50V    |
| C422   | 1-123-356-00 | ELECT       | 10MF     | 20%    | 25V    | C920   | 1-130-474-00 | MYLAR       | 0.0018MF | 5%  | 50V    |
| C423   | 1-161-059-00 | CERAMIC     | 0.047MF  | 10%    | 25V    | C921   | 1-123-379-00 | ELECT       | 0.47MF   | 20% | 50V    |
| C501   | 1-123-330-00 | ELECT       | 22MF     | 20%    | 16V    | C922   | 1-161-013-00 | CERAMIC     | 0.01MF   | 10% | 25V    |
| C502   | 1-123-332-00 | ELECT       | 47MF     | 20%    | 16V    | C923   | 1-123-382-00 | ELECT       | 3.3MF    | 20% | 50V    |
| C600   | 1-161-059-00 | CERAMIC     | 0.047MF  | 10%    | 25V    | C924   | 1-123-380-00 | ELECT       | 1MF      | 20% | 50V    |
| C601   | 1-123-318-00 | ELECT       | 33MF     | 20%    | 16V    | C925   | 1-130-482-00 | MYLAR       | 0.0082MF | 5%  | 50V    |
| C602   | 1-123-356-00 | ELECT       | 10MF     | 20%    | 25V    | C926   | 1-123-318-00 | ELECT       | 33MF     | 20% | 16V    |
| C603   | 1-123-332-00 | ELECT       | 47MF     | 20%    | 25V    | C927   | 1-123-306-00 | ELECT       | 47MF     | 20% | 10V    |
| C605   | 1-123-330-00 | ELECT       | 22MF     | 20%    | 16V    | C928   | 1-130-479-00 | MYLAR       | 0.0047MF | 5%  | 50V    |
| C608   | 1-123-306-00 | ELECT       | 47MF     | 20%    | 10V    | C929   | 1-130-477-00 | MYLAR       | 0.0033MF | 5%  | 50V    |
| C609   | 1-123-356-00 | ELECT       | 10MF     | 20%    | 25V    | C930   | 1-130-923-00 | FILM        | 0.0047MF | 10% | 400V   |
| C610   | 1-123-330-00 | ELECT       | 22MF     | 20%    | 16V    | C931   | 1-123-318-00 | ELECT       | 33MF     | 20% | 16V    |

When indicating parts by reference number, please include the board name.

| Ref.No           | Part No.      | Description        | Remark  | Ref.No            | Part No.     | Description           | Remark |
|------------------|---------------|--------------------|---------|-------------------|--------------|-----------------------|--------|
| C932             | 1-123-330-00  | ELECT 22MF         | 20% 16V | IC603             | 8-759-240-52 | IC TC4052BP           |        |
| <u>CONNECTOR</u> |               |                    |         | IC604             | 8-759-745-60 | IC NJM4560D           |        |
| CN001            | *1-560-894-00 | PIN, CONNECTOR 6P  |         | IC900             | 8-759-102-68 | IC UPC1520CA          |        |
| CN002            | *1-560-899-00 | PIN, CONNECTOR 11P |         | IC901             | 8-759-101-73 | IC UPC1513HA          |        |
| CN003            | *1-560-897-00 | PIN, CONNECTOR 9P  |         | <u>COIL</u>       |              |                       |        |
| CN004            | *1-560-894-00 | PIN, CONNECTOR 6P  |         | L201              | 1-410-120-11 | MICRO INDUCTOR 1.2MMH |        |
| CN005            | *1-560-890-00 | PIN, CONNECTOR 2P  |         | L501              | 1-407-510-00 | MICRO INDUCTOR 33MMH  |        |
| CN006            | *1-560-893-00 | PIN, CONNECTOR 5P  |         | L503              | 1-410-120-11 | MICRO INDUCTOR 1.2MMH |        |
| CN007            | *1-560-891-00 | PIN, CONNECTOR 3P  |         | L900              | 1-407-508-00 | MICRO INDUCTOR 22MMH  |        |
| CN008            | *1-560-894-00 | PIN, CONNECTOR 6P  |         | <u>TRANSISTOR</u> |              |                       |        |
| CN009            | *1-560-891-00 | PIN, CONNECTOR 3P  |         | Q002              | 8-729-900-36 | TRANSISTOR DTC124ES   |        |
| <u>JACK</u>      |               |                    |         | Q003              | 8-729-900-36 | TRANSISTOR DTC124ES   |        |
| CNJ001           | 1-507-742-00  | JACK, PIN 2P       |         | Q104              | 8-729-900-36 | TRANSISTOR DTC124ES   |        |
| CNJ002           | 1-507-744-00  | JACK, PIN 4P       |         | Q202              | 8-729-900-36 | TRANSISTOR DTC124ES   |        |
| <u>DIODE</u>     |               |                    |         | Q203              | 8-729-900-36 | TRANSISTOR DTC124ES   |        |
| D001             | 8-719-000-12  | DIODE MC931        |         | Q204              | 8-729-245-83 | TRANSISTOR 2SC2458    |        |
| D201             | 8-719-000-12  | DIODE MC931        |         | Q401              | 8-729-204-83 | TRANSISTOR 2SA1048    |        |
| D210             | 8-719-911-19  | DIODE 1SS119       |         | Q402              | 8-729-245-83 | TRANSISTOR 2SC2458    |        |
| D401             | 8-719-911-19  | DIODE 1SS119       |         | Q403              | 8-729-204-83 | TRANSISTOR 2SA1048    |        |
| D408             | 8-719-100-47  | DIODE RD8.2EB1     |         | Q404              | 8-729-245-83 | TRANSISTOR 2SC2458    |        |
| D502             | 8-719-100-35  | DIODE RD5.6EB2     |         | Q501              | 8-729-965-22 | TRANSISTOR 2SC1652    |        |
| D503             | 8-719-100-58  | DIODE RD10EB3      |         | Q502              | 8-729-965-22 | TRANSISTOR 2SC1652    |        |
| D600             | 8-719-911-19  | DIODE 1SS119       |         | Q600              | 8-729-245-83 | TRANSISTOR 2SC2458    |        |
| D601             | 8-719-911-19  | DIODE 1SS119       |         | Q601              | 8-729-245-83 | TRANSISTOR 2SC2458    |        |
| D604             | 8-719-108-12  | DIODE RD9.1EW      |         | Q700              | 8-729-967-32 | TRANSISTOR 2SC2673    |        |
| D700             | 8-719-151-07  | DIODE RD5.1E-B     |         | Q800              | 8-729-967-32 | TRANSISTOR 2SC2673    |        |
| D800             | 8-719-151-07  | DIODE RD5.1E-B     |         | Q902              | 8-729-245-83 | TRANSISTOR 2SC2458    |        |
| D901             | 8-719-000-06  | DIODE MC921        |         | Q904              | 8-729-177-43 | TRANSISTOR 2SD774     |        |
| <u>FILTER</u>    |               |                    |         | Q906              | 8-729-965-22 | TRANSISTOR 2SC1652    |        |
| FL001            | 1-235-372-11  | FILTER, BAND PASS  |         | Q907              | 8-729-900-89 | TRANSISTOR DTC144ES   |        |
| FL002            | 1-235-373-11  | FILTER, BAND PASS  |         | Q908              | 8-729-900-89 | TRANSISTOR DTC144ES   |        |
| FL003            | 1-235-374-11  | FILTER, BAND PASS  |         | <u>RESISTOR</u>   |              |                       |        |
| FL004            | 1-235-375-11  | FILTER, BAND PASS  |         | R001              | 1-247-898-00 | CARBON 620K 5% 1/6W   |        |
| FL101            | 1-464-400-11  | L.P.F UNIT         |         | R002              | 1-247-843-00 | CARBON 3.3K 5% 1/6W   |        |
| FL102            | 1-235-370-11  | FILTER (LPF)       |         | R003              | 1-247-843-00 | CARBON 3.3K 5% 1/6W   |        |
| FL202            | 1-235-369-11  | FILTER (LPF)       |         | R004              | 1-247-843-00 | CARBON 3.3K 5% 1/6W   |        |
| <u>IC</u>        |               |                    |         | R005              | 1-247-845-00 | CARBON 3.9K 5% 1/6W   |        |
| IC001            | 8-752-009-70  | IC CX20097         |         | R006              | 1-215-429-00 | METAL 2.2K 1% 1/6W    |        |
| IC002            | 8-752-010-50  | IC CX20105         |         | R007              | 1-247-877-00 | CARBON 82K 5% 1/6W    |        |
| IC003            | 8-752-010-40  | IC CX20104         |         | R008              | 1-215-458-00 | METAL 36K 1% 1/6W     |        |
| IC004            | 8-757-982-00  | IC CX-7982         |         | R010              | 1-247-857-00 | CARBON 12K 5% 1/6W    |        |
| IC007            | 8-752-006-10  | IC CX20061         |         | R011              | 1-215-441-00 | METAL 6.8K 1% 1/6W    |        |
| IC202            | 8-752-010-50  | IC CX20105         |         | R012              | 1-249-421-11 | CARBON 2.2K 5% 1/6W   |        |
| IC207            | 8-752-006-10  | IC CX20061         |         | R016              | 1-247-803-00 | CARBON 68K 5% 1/6W    |        |
| IC600            | 8-759-910-45  | IC TK15010         |         | R017              | 1-247-863-00 | CARBON 22K 5% 1/6W    |        |
| IC601            | 8-752-006-10  | IC CX20061         |         | R020              | 1-215-439-00 | METAL 5.6K 1% 1/6W    |        |
| IC602            | 8-759-145-58  | IC UPC4558C        |         | R021              | 1-247-849-00 | CARBON 5.6K 5% 1/6W   |        |
|                  |               |                    |         | R022              | 1-247-859-00 | CARBON 15K 5% 1/6W    |        |
|                  |               |                    |         | R023              | 1-247-852-00 | CARBON 7.5K 5% 1/6W   |        |
|                  |               |                    |         | R024              | 1-247-824-00 | CARBON 510 5% 1/6W    |        |

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No.     | Description | Remark       | Ref.No | Part No.     | Description | Remark       |
|--------|--------------|-------------|--------------|--------|--------------|-------------|--------------|
| R025   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  | R109   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  |
| R026   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R111   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  |
| R027   | 1-247-852-00 | CARBON      | 7.5K 5% 1/6W | R112   | 1-247-809-00 | CARBON      | 120 5% 1/6W  |
| R028   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W | R113   | 1-247-879-00 | CARBON      | 100K 5% 1/6W |
| R029   | 1-247-834-00 | CARBON      | 1.3K 5% 1/6W | R114   | 1-247-860-00 | CARBON      | 16K 5% 1/6W  |
| R030   | 1-247-804-00 | CARBON      | 75 5% 1/6W   | R115   | 1-247-860-00 | CARBON      | 16K 5% 1/6W  |
| R031   | 1-247-858-00 | CARBON      | 13K 5% 1/6W  | R116   | 1-247-829-00 | CARBON      | 820 5% 1/6W  |
| R032   | 1-247-858-00 | CARBON      | 13K 5% 1/6W  | R117   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   |
| R033   | 1-247-833-00 | CARBON      | 1.2K 5% 1/6W | R118   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   |
| R034   | 1-247-838-00 | CARBON      | 2K 5% 1/6W   | R119   | 1-247-829-00 | CARBON      | 820 5% 1/6W  |
| R035   | 1-247-834-00 | CARBON      | 1.3K 5% 1/6W | R120   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   |
| R036   | 1-247-885-00 | CARBON      | 180K 5% 1/6W | R121   | 1-247-829-00 | CARBON      | 820 5% 1/6W  |
| R037   | 1-247-849-00 | CARBON      | 5.6K 5% 1/6W | R122   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   |
| R038   | 1-247-865-00 | CARBON      | 27K 5% 1/6W  | R123   | 1-247-829-00 | CARBON      | 820 5% 1/6W  |
| R040   | 1-215-437-00 | METAL       | 4.7K 1% 1/6W | R124   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  |
| R041   | 1-247-824-00 | CARBON      | 510 5% 1/6W  | R125   | 1-247-849-00 | CARBON      | 5.6K 5% 1/6W |
| R042   | 1-247-825-00 | CARBON      | 560 5% 1/6W  | R201   | 1-247-898-00 | CARBON      | 620K 5% 1/6W |
| R043   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R202   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W |
| R044   | 1-247-895-00 | CARBON      | 470K 5% 1/6W | R203   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W |
| R045   | 1-247-807-00 | CARBON      | 100 5% 1/6W  | R204   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W |
| R046   | 1-247-817-00 | CARBON      | 270 5% 1/6W  | R205   | 1-215-437-00 | METAL       | 4.7K 1% 1/6W |
| R047   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  | R206   | 1-215-433-00 | METAL       | 3.3K 1% 1/6W |
| R050   | 1-247-868-00 | CARBON      | 36K 5% 1/6W  | R207   | 1-247-873-00 | CARBON      | 56K 5% 1/6W  |
| R051   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R208   | 1-215-457-00 | METAL       | 33K 1% 1/6W  |
| R052   | 1-215-453-00 | METAL       | 22K 1% 1/6W  | R210   | 1-247-851-00 | CARBON      | 6.8K 5% 1/6W |
| R053   | 1-247-864-00 | CARBON      | 24K 5% 1/6W  | R211   | 1-215-439-00 | METAL       | 5.6K 1% 1/6W |
| R054   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R212   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W |
| R055   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  | R214   | 1-247-869-00 | CARBON      | 39K 5% 1/6W  |
| R056   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | R215   | 1-247-883-00 | CARBON      | 150K 5% 1/6W |
| R057   | 1-247-861-00 | CARBON      | 18K 5% 1/6W  | R217   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  |
| R059   | 1-215-451-00 | METAL       | 18K 1% 1/6W  | R219   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W |
| R060   | 1-247-835-00 | CARBON      | 1.5K 5% 1/6W | R220   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  |
| R064   | 1-247-817-00 | CARBON      | 270 5% 1/6W  | R221   | 1-247-849-00 | CARBON      | 5.6K 5% 1/6W |
| R065   | 1-247-885-00 | CARBON      | 180K 5% 1/6W | R222   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  |
| R066   | 1-247-823-00 | CARBON      | 470 5% 1/6W  | R223   | 1-247-852-00 | CARBON      | 7.5K 5% 1/6W |
| R069   | 1-215-442-00 | METAL       | 7.5K 1% 1/6W | R224   | 1-247-824-00 | CARBON      | 510 5% 1/6W  |
| R071   | 1-247-895-00 | CARBON      | 470K 5% 1/6W | R225   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  |
| R072   | 1-247-895-00 | CARBON      | 470K 5% 1/6W | R226   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  |
| R083   | 1-215-439-00 | METAL       | 5.6K 1% 1/6W | R227   | 1-247-852-00 | CARBON      | 7.5K 5% 1/6W |
| R085   | 1-247-849-00 | CARBON      | 5.6K 5% 1/6W | R228   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W |
| R088   | 1-247-818-00 | CARBON      | 300 5% 1/6W  | R229   | 1-247-834-00 | CARBON      | 1.3K 5% 1/6W |
| R089   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  | R230   | 1-247-804-00 | CARBON      | 75 5% 1/6W   |
| R093   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R231   | 1-247-858-00 | CARBON      | 13K 5% 1/6W  |
| R094   | 1-247-825-00 | CARBON      | 560 5% 1/6W  | R232   | 1-247-858-00 | CARBON      | 13K 5% 1/6W  |
| R097   | 1-247-817-00 | CARBON      | 270 5% 1/6W  | R233   | 1-247-833-00 | CARBON      | 1.2K 5% 1/6W |
| R098   | 1-247-813-00 | CARBON      | 180 5% 1/6W  | R234   | 1-247-838-00 | CARBON      | 2K 5% 1/6W   |
| R099   | 1-247-852-00 | CARBON      | 7.5K 5% 1/6W | R235   | 1-247-834-00 | CARBON      | 1.3K 5% 1/6W |
| R101   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  | R236   | 1-247-885-00 | CARBON      | 180K 5% 1/6W |
| R104   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  | R237   | 1-247-849-00 | CARBON      | 5.6K 5% 1/6W |
| R105   | 1-247-891-00 | CARBON      | 330K 5% 1/6W | R238   | 1-247-865-00 | CARBON      | 27K 5% 1/6W  |
| R106   | 1-247-891-00 | CARBON      | 330K 5% 1/6W | R239   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  |
| R107   | 1-247-891-00 | CARBON      | 330K 5% 1/6W | R241   | 1-247-824-00 | CARBON      | 510 5% 1/6W  |
| R108   | 1-247-891-00 | CARBON      | 330K 5% 1/6W | R242   | 1-247-825-00 | CARBON      | 560 5% 1/6W  |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No.     | Description | Remark       | Ref.No | Part No.     | Description | Remark       |
|--------|--------------|-------------|--------------|--------|--------------|-------------|--------------|
| R243   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R615   | 1-247-849-00 | CARBON      | 5.6K 5% 1/6W |
| R244   | 1-247-895-00 | CARBON      | 470K 5% 1/6W | R616   | 1-247-815-00 | CARBON      | 220 5% 1/6W  |
| R245   | 1-247-807-00 | CARBON      | 100 5% 1/6W  | R619   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  |
| R250   | 1-247-865-00 | CARBON      | 27K 5% 1/6W  | R620   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  |
| R251   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R621   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  |
| R252   | 1-215-453-00 | METAL       | 22K 1% 1/6W  | R622   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  |
| R254   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R623   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  |
| R255   | 1-247-866-00 | CARBON      | 30K 5% 1/6W  | R700   | 1-247-841-00 | CARBON      | 2.7K 5% 1/6W |
| R260   | 1-247-835-00 | CARBON      | 1.5K 5% 1/6W | R701   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W |
| R264   | 1-247-817-00 | CARBON      | 270 5% 1/6W  | R703   | 1-247-807-00 | CARBON      | 100 5% 1/6W  |
| R265   | 1-247-885-00 | CARBON      | 180K 5% 1/6W | R704   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  |
| R266   | 1-247-823-00 | CARBON      | 470 5% 1/6W  | R707   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W |
| R269   | 1-215-438-00 | METAL       | 5.1K 1% 1/6W | R708   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  |
| R271   | 1-247-895-00 | CARBON      | 470K 5% 1/6W | R709   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  |
| R272   | 1-247-895-00 | CARBON      | 470K 5% 1/6W | R710   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  |
| R283   | 1-215-441-00 | METAL       | 6.8K 1% 1/6W | R711   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  |
| R288   | 1-247-815-00 | CARBON      | 220 5% 1/6W  | R712   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  |
| R289   | 1-247-850-00 | CARBON      | 6.2K 5% 1/6W | R713   | 1-247-825-00 | CARBON      | 560 5% 1/6W  |
| R293   | 1-247-824-00 | CARBON      | 510 5% 1/6W  | R714   | 1-247-837-00 | CARBON      | 1.8K 5% 1/6W |
| R294   | 1-247-825-00 | CARBON      | 560 5% 1/6W  | R715   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W |
| R297   | 1-247-819-00 | CARBON      | 330 5% 1/6W  | R717   | 1-247-853-00 | CARBON      | 8.2K 5% 1/6W |
| R298   | 1-247-811-00 | CARBON      | 150 5% 1/6W  | R719   | 1-247-849-00 | CARBON      | 5.6K 5% 1/6W |
| R299   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W | R720   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  |
| R401   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R721   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   |
| R402   | 1-247-879-00 | CARBON      | 100K 5% 1/6W | R800   | 1-247-841-00 | CARBON      | 2.7K 5% 1/6W |
| R403   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | R801   | 1-247-839-00 | CARBON      | 2.2K 5% 1/6W |
| R404   | 1-247-864-00 | CARBON      | 24K 5% 1/6W  | R803   | 1-247-807-00 | CARBON      | 100 5% 1/6W  |
| R405   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  | R804   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  |
| R406   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R807   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W |
| R408   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  | R808   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  |
| R409   | 1-247-819-00 | CARBON      | 330 5% 1/6W  | R809   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  |
| R412   | 1-247-819-00 | CARBON      | 330 5% 1/6W  | R810   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  |
| R413   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  | R811   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  |
| R414   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  | R812   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  |
| R415   | 1-247-895-00 | CARBON      | 470K 5% 1/6W | R813   | 1-247-825-00 | CARBON      | 560 5% 1/6W  |
| R418   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R814   | 1-247-837-00 | CARBON      | 1.8K 5% 1/6W |
| R419   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R815   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W |
| R420   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R817   | 1-247-853-00 | CARBON      | 8.2K 5% 1/6W |
| R502   | 1-247-737-00 | CARBON      | 1K 5% 1/6W   | R819   | 1-247-849-00 | CARBON      | 5.6K 5% 1/6W |
| R503   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R820   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  |
| R504   | 1-212-857-00 | FUSIBLE     | 10 5% 1/6W   | R821   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   |
| R505   | 1-247-815-00 | CARBON      | 220 5% 1/6W  | R900   | 1-247-858-00 | CARBON      | 13K 5% 1/6W  |
| R506   | 1-247-815-00 | CARBON      | 220 5% 1/6W  | R904   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  |
| R600   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R905   | 1-247-879-00 | CARBON      | 100K 5% 1/6W |
| R601   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R908   | 1-247-825-00 | CARBON      | 560 5% 1/6W  |
| R602   | 1-247-854-00 | CARBON      | 9.1K 5% 1/6W | R909   | 1-215-423-00 | METAL       | 1.2K 1% 1/6W |
| R603   | 1-247-861-00 | CARBON      | 18K 5% 1/6W  | R910   | 1-247-857-00 | CARBON      | 12K 5% 1/6W  |
| R608   | 1-247-887-00 | CARBON      | 220K 5% 1/6W | R911   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  |
| R609   | 1-247-887-00 | CARBON      | 220K 5% 1/6W | R914   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W |
| R610   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R915   | 1-247-783-00 | CARBON      | 10 5% 1/6W   |
| R611   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R916   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  |
| R612   | 1-247-873-00 | CARBON      | 56K 5% 1/6W  | R918   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  |
| R613   | 1-247-807-00 | CARBON      | 100 5% 1/6W  | R919   | 1-215-403-00 | METAL       | 180 1% 1/6W  |

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When indicating parts by reference number, please include the board name.



| Ref.No                              | Part No.     | Description              | Remark | Ref.No | Part No.     | Description                 | Remark |
|-------------------------------------|--------------|--------------------------|--------|--------|--------------|-----------------------------|--------|
| R920                                | 1-247-885-00 | CARBON 180K 5% 1/6W      |        | C013   | 1-161-057-00 | CERAMIC 0.033MF 10% 25V     |        |
| R921                                | 1-247-819-00 | CARBON 330 5% 1/6W       |        | C014   | 1-161-059-00 | CERAMIC 0.047MF 10% 25V     |        |
| R923                                | 1-247-859-00 | CARBON 15K 5% 1/6W       |        | C016   | 1-123-333-00 | ELECT 100MF 20% 16V         |        |
| R924                                | 1-247-824-00 | CARBON 510 5% 1/6W       |        | C017   | 1-161-059-00 | CERAMIC 0.047MF 10% 25V     |        |
|                                     |              |                          |        | C019   | 1-123-330-00 | ELECT 22MF 20% 16V          |        |
| R926                                | 1-247-859-00 | CARBON 15K 5% 1/6W       |        | C020   | 1-102-963-00 | CERAMIC 33PF 5% 50V         |        |
| R928                                | 1-247-855-00 | CARBON 10K 5% 1/6W       |        | C021   | 1-102-963-00 | CERAMIC 33PF 5% 50V         |        |
| R929                                | 1-249-421-11 | CARBON 2.2K 5% 1/6W      |        | C025   | 1-123-330-00 | ELECT 22MF 20% 16V          |        |
| R930                                | 1-247-849-00 | CARBON 5.6K 5% 1/6W      |        | C026   | 1-161-057-00 | CERAMIC 0.033MF 10% 25V     |        |
| R931                                | 1-247-804-00 | CARBON 75 5% 1/6W        |        | C027   | 1-161-055-00 | CERAMIC 0.022MF 10% 25V     |        |
| R932                                | 1-247-871-00 | CARBON 47K 5% 1/6W       |        | C105   | 1-161-059-00 | CERAMIC 0.047MF 10% 25V     |        |
| R933                                | 1-247-871-00 | CARBON 47K 5% 1/6W       |        | C106   | 1-161-013-00 | CERAMIC 0.01MF 10% 25V      |        |
| R934                                | 1-247-847-00 | CARBON 4.7K 5% 1/6W      |        | C107   | 1-161-013-00 | CERAMIC 0.01MF 10% 25V      |        |
| R935                                | 1-215-437-00 | METAL 4.7K 1% 1/6W       |        | C501   | 1-102-961-00 | CERAMIC 27PF 5% 50V         |        |
| R936                                | 1-247-821-00 | CARBON 390 5% 1/6W       |        | C502   | 1-102-961-00 | CERAMIC 27PF 5% 50V         |        |
| R937                                | 1-247-895-00 | CARBON 470K 5% 1/6W      |        | C503   | 1-123-306-00 | ELECT 47MF 20% 10V          |        |
| R938                                | 1-247-847-00 | CARBON 4.7K 5% 1/6W      |        | C504   | 1-130-483-00 | MYLAR 0.01MF 5% 50V         |        |
| R939                                | 1-247-835-00 | CARBON 1.5K 5% 1/6W      |        | C505   | 1-130-483-00 | MYLAR 0.01MF 5% 50V         |        |
| R940                                | 1-215-445-00 | METAL 10K 1% 1/6W        |        | C506   | 1-123-382-00 | ELECT 3.3MF 20% 50V         |        |
| R980                                | 1-247-887-00 | CARBON 220K 5% 1/6W      |        | C507   | 1-161-059-00 | CERAMIC 0.047MF 10% 25V     |        |
| R999                                | 1-247-861-00 | CARBON 18K 5% 1/6W       |        | C508   | 1-161-059-00 | CERAMIC 0.047MF 10% 25V     |        |
| VARIABLE RESISTOR                   |              |                          |        | C509   | 1-123-382-00 | ELECT 3.3MF 20% 50V         |        |
| RV801                               | 1-228-996-00 | RES ADJ CARBON 47K       |        | C510   | 1-161-059-00 | CERAMIC 0.047MF 10% 25V     |        |
| RV901                               | 1-228-920-00 | RES ADJ CARBON 2.2K      |        | C511   | 1-123-382-00 | ELECT 3.3MF 20% 50V         |        |
| RV902                               | 1-224-662-00 | RES ADJ METAL FILM 220K  |        | C512   | 1-130-479-00 | MYLAR 0.0047MF 5% 50V       |        |
| TRANSFORMER                         |              |                          |        | C513   | 1-123-298-00 | ELECT 470MF 20% 6.3V        |        |
| T900                                | 1-433-237-00 | TRANSFORMER OSCILLATOR   |        | C514   | 1-123-333-00 | ELECT 100MF 20% 16V         |        |
| CRYSTAL                             |              |                          |        | C515   | 1-123-381-00 | ELECT 2.2MF 20% 50V         |        |
| X001                                | 1-567-262-11 | VIBRATOR CRYSTAL         |        | C516   | 1-131-369-00 | TANTALUM 4.7MF 10% 16V      |        |
| *****                               |              |                          |        | C517   | 1-161-059-00 | CERAMIC 0.047MF 10% 25V     |        |
| *A-6715-267-A SS-32 BOARD, COMPLETE |              |                          |        | C518   | 1-123-381-00 | ELECT 2.2MF 20% 50V         |        |
| *****                               |              |                          |        | C519   | 1-131-369-00 | TANTALUM 4.7MF 10% 16V      |        |
| *3-684-364-01 SHEET, INSULATING, SS |              |                          |        | C520   | 1-161-059-00 | CERAMIC 0.047MF 10% 25V     |        |
| 4-818-403-00 RIVET, NYLON           |              |                          |        | C521   | 1-127-469-00 | ELECT (SOLID) 0.33MF 5% 16V |        |
| CAPACITOR                           |              |                          |        | C523   | 1-123-380-00 | ELECT 1MF 20% 50V           |        |
| C001                                | 1-161-025-00 | CERAMIC 0.1MF 10% 25V    |        | C524   | 1-161-053-00 | CERAMIC 0.015MF 10% 25V     |        |
| C002                                | 1-123-318-00 | ELECT 33MF 20% 16V       |        | C525   | 1-161-023-00 | CERAMIC 0.068MF 10% 25V     |        |
| C003                                | 1-161-057-00 | CERAMIC 0.033MF 10% 25V  |        | C526   | 1-123-369-00 | ELECT 4.7MF 20% 25V         |        |
| C006                                | 1-129-794-00 | FILM 0.0033MF 5% 100V    |        | C527   | 1-124-429-00 | ELECT 0.68MF 20% 50V        |        |
| C007                                | 1-129-794-00 | FILM 0.0033MF 5% 100V    |        | C528   | 1-161-059-00 | CERAMIC 0.047MF 10% 25V     |        |
| C008                                | 1-161-059-00 | CERAMIC 0.047MF 10% 25V  |        | C529   | 1-161-059-00 | CERAMIC 0.047MF 10% 25V     |        |
| C009                                | 1-161-059-00 | CERAMIC 0.047MF 10% 25V  |        | C530   | 1-127-468-00 | ELECT (SOLID) 0.22MF 5% 16V |        |
| C010                                | 1-161-059-00 | CERAMIC 0.047MF 10% 25V  |        | C531   | 1-108-582-00 | MYLAR 0.013MF 5% 50V        |        |
| C011                                | 1-161-057-00 | CERAMIC 0.033MF 10% 25V  |        | C532   | 1-161-042-00 | CERAMIC 0.0018MF 10% 25V    |        |
| C012                                | 1-123-381-00 | ELECT 2.2MF 20% 50V      |        | C533   | 1-161-059-00 | CERAMIC 0.047MF 10% 25V     |        |
| C534                                | 1-161-054-00 | CERAMIC 0.018MF 10% 25V  |        | C534   | 1-161-054-00 | CERAMIC 0.018MF 10% 25V     |        |
| C535                                | 1-161-013-00 | CERAMIC 0.01MF 10% 25V   |        | C535   | 1-161-013-00 | CERAMIC 0.01MF 10% 25V      |        |
| C536                                | 1-161-048-00 | CERAMIC 0.0056MF 10% 25V |        | C536   | 1-161-048-00 | CERAMIC 0.0056MF 10% 25V    |        |
| C537                                | 1-161-055-00 | CERAMIC 0.022MF 10% 25V  |        | C537   | 1-161-055-00 | CERAMIC 0.022MF 10% 25V     |        |
| C538                                | 1-123-381-00 | ELECT 2.2MF 20% 50V      |        | C538   | 1-123-381-00 | ELECT 2.2MF 20% 50V         |        |
| C801                                | 1-123-381-00 | ELECT 2.2MF 20% 50V      |        | C801   | 1-123-381-00 | ELECT 2.2MF 20% 50V         |        |
| C802                                | 1-123-332-00 | ELECT 47MF 20% 16V       |        | C802   | 1-123-332-00 | ELECT 47MF 20% 16V          |        |
| C803                                | 1-123-332-00 | ELECT 47MF 20% 16V       |        | C803   | 1-123-332-00 | ELECT 47MF 20% 16V          |        |

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| Ref.No           | Part No.       | Description         | Remark   | Ref.No            | Part No.       | Description          | Remark |
|------------------|----------------|---------------------|----------|-------------------|----------------|----------------------|--------|
| C804             | 1-130-474-00   | MYLAR               | 0.0018MF | 5%                | 50V            |                      |        |
| C805             | 1-123-332-00   | ELECT               | 47MF     | 20%               | 16V            |                      |        |
| <u>FILTER</u>    |                |                     |          | <u>IC</u>         |                |                      |        |
| CF001            | 1-527-992-11   | OSCILLATOR, CERAMIC |          | IC001A            | 8-759-914-47   | IC 888551-1308       |        |
| <u>CONNECTOR</u> |                |                     |          | IC002A            | 8-752-320-11   | IC CXK1001P          |        |
| CN001            | *1-560-890-00  | PIN, CONNECTOR 2P   |          | IC004             | 8-759-800-72   | IC LA7205            |        |
| CN002            | *1-560-890-00  | PIN, CONNECTOR 2P   |          | IC005A            | 8-759-600-24   | IC M54543L           |        |
| CN003            | *1-560-890-00  | PIN, CONNECTOR 2P   |          | IC501             | 8-751-941-05   | IC CX-1948-5         |        |
| CN004            | *1-560-891-00  | PIN, CONNECTOR 3P   |          | IC502             | 8-759-132-40   | IC UPC324C           |        |
| CN006            | *1-560-890-00  | PIN, CONNECTOR 2P   |          | IC503             | 8-759-132-40   | IC UPC324C           |        |
| CN007            | *1-560-890-00  | PIN, CONNECTOR 2P   |          | IC504             | 8-759-145-58   | IC UPC4558C          |        |
| CN008            | *1-560-897-00  | PIN, CONNECTOR 9P   |          | IC801             | 8-759-135-80   | IC UPC358C           |        |
| CN009            | *1-560-894-00  | PIN, CONNECTOR 6P   |          | <u>COIL</u>       |                |                      |        |
| CN010            | *1-560-895-00  | PIN, CONNECTOR 7P   |          | L001              | A.1-408-615-00 | MICRO INDUCTOR 100UH |        |
| CN011            | *1-560-895-00  | PIN, CONNECTOR 7P   |          | <u>TRANSISTOR</u> |                |                      |        |
| CN012            | *1-560-890-00  | PIN, CONNECTOR 2P   |          | Q001              | 8-729-245-83   | TRANSISTOR 2SC2458   |        |
| CN013            | *1-560-895-00  | PIN, CONNECTOR 7P   |          | Q002              | A.8-729-204-83 | TRANSISTOR 2SA1048   |        |
| CN014            | *1-560-896-00  | PIN, CONNECTOR 8P   |          | Q003              | A.8-729-103-43 | TRANSISTOR 2SB734    |        |
| CN015            | *1-560-890-00  | PIN, CONNECTOR 2P   |          | Q004              | 8-729-900-61   | TRANSISTOR DTA114ES  |        |
| CN016            | *1-560-892-00  | PIN, CONNECTOR 4P   |          | Q005              | 8-729-900-65   | TRANSISTOR DTA144ES  |        |
| CN501            | *1-560-892-00  | PIN, CONNECTOR 4P   |          | Q006              | 8-729-900-65   | TRANSISTOR DTA144ES  |        |
| CN502            | *1-560-890-00  | PIN, CONNECTOR 2P   |          | Q015              | 8-729-245-83   | TRANSISTOR 2SC2458   |        |
| CN503            | *1-560-466-00  | PIN, CONNECTOR 3P   |          | Q016              | A.8-729-204-83 | TRANSISTOR 2SA1048   |        |
| CN504            | *1-560-892-00  | PIN, CONNECTOR 4P   |          | Q017              | 8-729-245-83   | TRANSISTOR 2SC2458   |        |
| CN505            | *1-560-892-00  | PIN, CONNECTOR 4P   |          | Q018              | A.8-729-177-43 | TRANSISTOR 2SD774    |        |
| CN506            | *1-560-892-00  | PIN, CONNECTOR 4P   |          | Q019              | 8-729-204-83   | TRANSISTOR 2SA1048   |        |
| CN507            | *1-560-892-00  | PIN, CONNECTOR 4P   |          | Q020              | A.8-729-177-43 | TRANSISTOR 2SD774    |        |
| CN508            | *1-560-891-00  | PIN, CONNECTOR 3P   |          | Q021              | A.8-729-245-83 | TRANSISTOR 2SC2458   |        |
| <u>DIODE</u>     |                |                     |          | Q022              | 8-729-245-83   | TRANSISTOR 2SC2458   |        |
| D004             | 8-719-911-19   | DIODE 1SS119        |          | Q023              | A.8-729-245-83 | TRANSISTOR 2SC2458   |        |
| D005             | 8-719-911-19   | DIODE 1SS119        |          | Q024              | 8-729-245-83   | TRANSISTOR 2SC2458   |        |
| D006             | 8-719-911-19   | DIODE 1SS119        |          | Q025              | A.8-729-245-83 | TRANSISTOR 2SC2458   |        |
| D007             | 8-719-911-19   | DIODE 1SS119        |          | Q026              | A.8-729-188-23 | TRANSISTOR 2SD882    |        |
| D008             | 8-719-911-19   | DIODE 1SS119        |          | Q027              | 8-729-204-83   | TRANSISTOR 2SA1048   |        |
| D009             | 8-719-911-19   | DIODE 1SS119        |          | Q028              | 8-729-900-89   | TRANSISTOR DTC144ES  |        |
| D013             | A.8-719-200-02 | DIODE 10E-20        |          | Q029              | A.8-729-204-83 | TRANSISTOR 2SA1048   |        |
| D014             | 8-719-911-19   | DIODE 1SS119        |          | Q030              | A.8-729-245-83 | TRANSISTOR 2SC2458   |        |
| D018             | 8-719-911-19   | DIODE 1SS119        |          | Q031              | A.8-729-188-23 | TRANSISTOR 2SD882    |        |
| D501             | 8-719-911-19   | DIODE 1SS119        |          | Q032              | A.8-729-177-32 | TRANSISTOR 2SD773    |        |
| D504             | A.8-719-101-50 | DIODE RD5.1EL       |          | Q033              | A.8-729-116-42 | TRANSISTOR 2SD1164   |        |
| D505             | 8-719-911-19   | DIODE 1SS119        |          | Q035              | A.8-729-177-32 | TRANSISTOR 2SD773    |        |
| D506             | 8-719-911-19   | DIODE 1SS119        |          | Q036              | A.8-729-116-42 | TRANSISTOR 2SD1164   |        |
| D507             | 8-719-911-19   | DIODE 1SS119        |          | Q040              | 8-729-245-83   | TRANSISTOR 2SC2458   |        |
| D509             | 8-719-911-19   | DIODE 1SS119        |          | Q041              | 8-729-245-83   | TRANSISTOR 2SC2458   |        |
| D551             | 8-719-100-35   | DIODE RD5.6EB2      |          | Q501              | 8-729-245-83   | TRANSISTOR 2SC2458   |        |
| D801             | 8-719-911-19   | DIODE 1SS119        |          | Q502              | 8-729-900-89   | TRANSISTOR DTC144ES  |        |
| D802             | 8-719-911-19   | DIODE 1SS119        |          | Q503              | 8-729-245-83   | TRANSISTOR 2SC2458   |        |
| D803             | 8-719-911-19   | DIODE 1SS119        |          | Q504              | 8-729-900-89   | TRANSISTOR DTC144ES  |        |
| D804             | 8-719-911-19   | DIODE 1SS119        |          | Q506              | 8-729-900-89   | TRANSISTOR DTC144ES  |        |
|                  |                |                     |          | Q507              | 8-729-245-83   | TRANSISTOR 2SC2458   |        |

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|----------|--------------|---------------------|--------|----|------|--------|--------------|-------------|--------|----|------|
| Q508     | 8-729-900-89 | TRANSISTOR DTC144ES |        |    |      | R076   | 1-212-849-00 | FUSIBLE     | 4.7K   | 5% | 1/6W |
| Q509     | 8-729-900-61 | TRANSISTOR DTA114ES |        |    |      | R077   | 1-212-849-00 | FUSIBLE     | 4.7K   | 5% | 1/6W |
| Q510     | 8-729-900-61 | TRANSISTOR DTA114ES |        |    |      | R078   | 1-212-849-00 | FUSIBLE     | 4.7K   | 5% | 1/6W |
| Q801     | 8-729-900-89 | TRANSISTOR DTC144ES |        |    |      | R079   | 1-247-831-00 | CARBON      | 1K     | 5% | 1/6W |
| Q802     | 8-729-900-80 | TRANSISTOR DTC114ES |        |    |      | R080   | 1-247-871-00 | CARBON      | 47K    | 5% | 1/6W |
| Q803     | 8-729-900-89 | TRANSISTOR DTC144ES |        |    |      | R084   | 1-247-871-00 | CARBON      | 47K    | 5% | 1/6W |
| RESISTOR |              |                     |        |    |      | R085   | 1-247-814-00 | CARBON      | 200    | 5% | 1/6W |
| R001     | 1-247-847-00 | CARBON              | 4.7K   | 5% | 1/6W | R086   | 1-247-855-00 | CARBON      | 10K    | 5% | 1/6W |
| R002     | 1-247-847-00 | CARBON              | 4.7K   | 5% | 1/6W | R087   | 1-247-831-00 | CARBON      | 1K     | 5% | 1/6W |
| R004     | 1-247-847-00 | CARBON              | 4.7K   | 5% | 1/6W | R091   | 1-247-807-00 | CARBON      | 100    | 5% | 1/6W |
| R009     | 1-247-863-00 | CARBON              | 22K    | 5% | 1/6W | R092   | 1-247-863-00 | CARBON      | 22K    | 5% | 1/6W |
| R011     | 1-247-847-00 | CARBON              | 4.7K   | 5% | 1/6W | R093   | 1-247-847-00 | CARBON      | 4.7K   | 5% | 1/6W |
| R012     | 1-247-847-00 | CARBON              | 4.7K   | 5% | 1/6W | R094   | 1-247-859-00 | CARBON      | 15K    | 5% | 1/6W |
| R013     | 1-247-875-00 | CARBON              | 68K    | 5% | 1/6W | R095   | 1-247-831-00 | CARBON      | 1K     | 5% | 1/6W |
| R029     | 1-247-851-00 | CARBON              | 6.8K   | 5% | 1/6W | R096   | 1-247-847-00 | CARBON      | 4.7K   | 5% | 1/6W |
| R030     | 1-247-831-00 | CARBON              | 1K     | 5% | 1/6W | R097   | 1-247-879-00 | CARBON      | 100K   | 5% | 1/6W |
| R031     | 1-247-831-00 | CARBON              | 1K     | 5% | 1/6W | R098   | 1-247-855-00 | CARBON      | 10K    | 5% | 1/6W |
| R032     | 1-247-831-00 | CARBON              | 1K     | 5% | 1/6W | R100   | 1-247-843-00 | CARBON      | 3.3K   | 5% | 1/6W |
| R033     | 1-247-831-00 | CARBON              | 1K     | 5% | 1/6W | R108   | 1-247-895-00 | CARBON      | 470K   | 5% | 1/6W |
| R034     | 1-247-847-00 | CARBON              | 4.7K   | 5% | 1/6W | R112   | 1-247-859-00 | CARBON      | 15K    | 5% | 1/6W |
| R035     | 1-247-831-00 | CARBON              | 1K     | 5% | 1/6W | R113   | 1-247-869-00 | CARBON      | 39K    | 5% | 1/6W |
| R038     | 1-247-825-00 | CARBON              | 560    | 5% | 1/6W | R114   | 1-247-865-00 | CARBON      | 27K    | 5% | 1/6W |
| R041     | 1-247-861-00 | CARBON              | 18K    | 5% | 1/6W | R115   | 1-247-855-00 | CARBON      | 10K    | 5% | 1/6W |
| R042     | 1-247-862-00 | CARBON              | 20K    | 5% | 1/6W | R501   | 1-247-879-00 | CARBON      | 100K   | 5% | 1/6W |
| R043     | 1-247-873-00 | CARBON              | 56K    | 5% | 1/6W | R502   | 1-247-844-00 | CARBON      | 3.6K   | 5% | 1/6W |
| R044     | 1-247-855-00 | CARBON              | 10K    | 5% | 1/6W | R503   | 1-247-879-00 | CARBON      | 100K   | 5% | 1/6W |
| R046     | 1-247-807-00 | CARBON              | 100    | 5% | 1/6W | R504   | 1-247-844-00 | CARBON      | 3.6K   | 5% | 1/6W |
| R047     | 1-247-807-00 | CARBON              | 100    | 5% | 1/6W | R505   | 1-213-080-00 | FUSIBLE     | 68K    | 5% | 1/6W |
| R048     | 1-247-807-00 | CARBON              | 100    | 5% | 1/6W | R507   | 1-247-855-00 | CARBON      | 10K    | 5% | 1/6W |
| R049     | 1-247-807-00 | CARBON              | 100    | 5% | 1/6W | R508   | 1-247-863-00 | CARBON      | 22K    | 5% | 1/6W |
| R050     | 1-247-863-00 | CARBON              | 22K    | 5% | 1/6W | R509   | 1-247-863-00 | CARBON      | 22K    | 5% | 1/6W |
| R051     | 1-247-867-00 | CARBON              | 33K    | 5% | 1/6W | R510   | 1-247-831-00 | CARBON      | 1K     | 5% | 1/6W |
| R052     | 1-212-360-00 | METAL OXIDE         | 1      | 5% | 1W   | R511   | 1-247-870-00 | CARBON      | 43K    | 5% | 1/6W |
| R053     | 1-247-863-00 | CARBON              | 22K    | 5% | 1/6W | R512   | 1-247-858-00 | CARBON      | 13K    | 5% | 1/6W |
| R054     | 1-247-857-00 | CARBON              | 12K    | 5% | 1/6W | R513   | 1-247-857-00 | CARBON      | 12K    | 5% | 1/6W |
| R057     | 1-247-855-00 | CARBON              | 10K    | 5% | 1/6W | R514   | 1-247-836-00 | CARBON      | 1.6K   | 5% | 1/6W |
| R058     | 1-247-831-00 | CARBON              | 1K     | 5% | 1/6W | R515   | 1-247-826-00 | CARBON      | 620    | 5% | 1/6W |
| R059     | 1-212-366-00 | METAL OXIDE         | 3.3    | 5% | 1W   | R516   | 1-247-844-00 | CARBON      | 3.6K   | 5% | 1/6W |
| R060     | 1-247-831-00 | CARBON              | 1K     | 5% | 1/6W | R517   | 1-247-842-00 | CARBON      | 3K     | 5% | 1/6W |
| R061     | 1-247-895-00 | CARBON              | 470K   | 5% | 1/6W | R519   | 1-213-072-00 | FUSIBLE     | 33K    | 5% | 1/6W |
| R063     | 1-247-867-00 | CARBON              | 33K    | 5% | 1/6W | R520   | 1-247-825-00 | CARBON      | 560    | 5% | 1/6W |
| R064     | 1-247-871-00 | CARBON              | 47K    | 5% | 1/6W | R521   | 1-247-903-00 | CARBON      | 1M     | 5% | 1/6W |
| R065     | 1-212-360-00 | METAL OXIDE         | 1      | 5% | 1W   | R522   | 1-247-855-00 | CARBON      | 10K    | 5% | 1/6W |
| R066     | 1-247-807-00 | CARBON              | 100    | 5% | 1/6W | R523   | 1-247-831-00 | CARBON      | 1K     | 5% | 1/6W |
| R067     | 1-247-807-00 | CARBON              | 100    | 5% | 1/6W | R524   | 1-247-903-00 | CARBON      | 1M     | 5% | 1/6W |
| R068     | 1-247-855-00 | CARBON              | 10K    | 5% | 1/6W | R525   | 1-247-831-00 | CARBON      | 1K     | 5% | 1/6W |
| R069     | 1-247-845-00 | CARBON              | 3.9K   | 5% | 1/6W | R526   | 1-247-855-00 | CARBON      | 10K    | 5% | 1/6W |
| R070     | 1-247-879-00 | CARBON              | 100K   | 5% | 1/6W | R527   | 1-247-841-00 | CARBON      | 2.7K   | 5% | 1/6W |
| R071     | 1-247-844-00 | CARBON              | 3.6K   | 5% | 1/6W | R528   | 1-247-883-00 | CARBON      | 150K   | 5% | 1/6W |
| R072     | 1-249-421-11 | CARBON              | 2.2K   | 5% | 1/6W | R529   | 1-247-875-00 | CARBON      | 68K    | 5% | 1/6W |
| R073     | 1-247-863-00 | CARBON              | 22K    | 5% | 1/6W | R530   | 1-247-862-00 | CARBON      | 20K    | 5% | 1/6W |
| R075     | 1-247-831-00 | CARBON              | 1K     | 5% | 1/6W | R531   | 1-247-889-00 | CARBON      | 270K   | 5% | 1/6W |
|          |              |                     |        |    |      | R532   | 1-247-841-00 | CARBON      | 2.7K   | 5% | 1/6W |

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

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When indicating parts by reference number, please include the board name.

**SS-32****FU-38**

| Ref.No | Part No.     | Description | Remark       | Ref.No                                  | Part No.              | Description               | Remark |
|--------|--------------|-------------|--------------|-----------------------------------------|-----------------------|---------------------------|--------|
| R533   | 1-247-873-00 | CARBON      | 56K 5% 1/6W  | R815                                    | 1-247-847-00          | CARBON 4.7K 5% 1/6W       |        |
| R534   | 1-247-873-00 | CARBON      | 56K 5% 1/6W  | R816                                    | 1-247-879-00          | CARBON 100K 5% 1/6W       |        |
| R535   | 1-247-887-00 | CARBON      | 220K 5% 1/6W | VARIABLE RESISTOR                       |                       |                           |        |
| R536   | 1-247-869-00 | CARBON      | 39K 5% 1/6W  | RV501                                   | 1-228-996-00          | RES, ADJ, CARBON 47K      |        |
| R537   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | RV502                                   | 1-228-996-00          | RES, ADJ, CARBON 47K      |        |
| R538   | 1-247-900-00 | CARBON      | 750K 5% 1/6W | RV503                                   | 1-228-996-00          | RES, ADJ, CARBON 47K      |        |
| R539   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | RV504                                   | 1-228-991-00          | RES, ADJ, CARBON 2.2K     |        |
| R540   | 1-247-840-00 | CARBON      | 2.4K 5% 1/6W | RV505                                   | 1-230-504-11          | RES, ADJ, METAL GLAZE 220 |        |
| R541   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | RV506                                   | 1-228-989-00          | RES, ADJ, CARBON 470      |        |
| R542   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  | RV507                                   | 1-228-989-00          | RES, ADJ, CARBON 470      |        |
| R543   | 1-247-850-00 | CARBON      | 6.2K 5% 1/6W | RV508                                   | 1-228-996-00          | RES, ADJ, CARBON 47K      |        |
| R544   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  | *****                                   |                       |                           |        |
| R545   | 1-247-854-00 | CARBON      | 9.1K 5% 1/6W | *A-6717-396-A                           | FU-38 BOARD, COMPLETE |                           |        |
| R546   | 1-247-887-00 | CARBON      | 220K 5% 1/6W | *****                                   |                       |                           |        |
| R547   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  | *2-283-410-00                           | HOLDER (A), LED       |                           |        |
| R548   | 1-247-883-00 | CARBON      | 150K 5% 1/6W | CAPACITOR                               |                       |                           |        |
| R549   | 1-247-883-00 | CARBON      | 150K 5% 1/6W | C101                                    | 1-161-059-00          | CERAMIC 0.047MF 10% 25V   |        |
| R550   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  | DIODE                                   |                       |                           |        |
| R551   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  | D101                                    | 8-719-812-33          | DIODE TLG123A             |        |
| R552   | 1-247-896-00 | CARBON      | 510K 5% 1/6W | D102                                    | 8-719-000-06          | DIODE MC921               |        |
| R553   | 1-247-893-00 | CARBON      | 390K 5% 1/6W | D103                                    | 8-719-911-19          | DIODE 1SS119              |        |
| R554   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  | D105                                    | 8-719-000-06          | DIODE MC921               |        |
| R555   | 1-247-876-00 | CARBON      | 75K 5% 1/6W  | IC                                      |                       |                           |        |
| R556   | 1-247-867-00 | CARBON      | 33K 5% 1/6W  | IC101                                   | 8-741-131-70          | IC BX-1317                |        |
| R557   | 1-247-879-00 | CARBON      | 100K 5% 1/6W | TRANSISTOR                              |                       |                           |        |
| R558   | 1-247-879-00 | CARBON      | 100K 5% 1/6W | Q101 A.8-729-900-09 TRANSISTOR PICTURES |                       |                           |        |
| R559   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | RESISTOR                                |                       |                           |        |
| R560   | 1-247-879-00 | CARBON      | 100K 5% 1/6W | R101                                    | 1-247-833-00          | CARBON 1.2K 5% 1/6W       |        |
| R561   | 1-247-879-00 | CARBON      | 100K 5% 1/6W | R102                                    | 1-247-837-00          | CARBON 1.8K 5% 1/6W       |        |
| R562   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R103                                    | 1-247-843-00          | CARBON 3.3K 5% 1/6W       |        |
| R563   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  | R104                                    | 1-247-854-00          | CARBON 9.1K 5% 1/6W       |        |
| R564   | 1-247-872-00 | CARBON      | 51K 5% 1/6W  | R105                                    | 1-247-833-00          | CARBON 1.2K 5% 1/6W       |        |
| R565   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | R106                                    | 1-247-837-00          | CARBON 1.8K 5% 1/6W       |        |
| R566   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R107                                    | 1-247-843-00          | CARBON 3.3K 5% 1/6W       |        |
| R567   | 1-247-891-00 | CARBON      | 330K 5% 1/6W | R108                                    | 1-247-854-00          | CARBON 9.1K 5% 1/6W       |        |
| R568   | 1-247-879-00 | CARBON      | 100K 5% 1/6W | R109                                    | 1-247-825-00          | CARBON 560 5% 1/6W        |        |
| R570   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | R110                                    | 1-247-831-00          | CARBON 1K 5% 1/6W         |        |
| R572   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R152                                    | 1-247-855-00          | CARBON 10K 5% 1/6W        |        |
| R573   | 1-247-825-00 | CARBON      | 560 5% 1/6W  | R153                                    | 1-247-847-00          | CARBON 4.7K 5% 1/6W       |        |
| R801   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | VARIABLE RESISTOR                       |                       |                           |        |
| R802   | 1-247-829-00 | CARBON      | 820 5% 1/6W  | RV101                                   | 1-230-431-11          | RES, VAR, CARBON 100K     |        |
| R803   | 1-247-885-00 | CARBON      | 180K 5% 1/6W | RV151                                   | 1-230-613-11          | RES, VAR, CARBON 5K       |        |
| R804   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  |                                         |                       |                           |        |
| R805   | 1-247-844-00 | CARBON      | 3.6K 5% 1/6W |                                         |                       |                           |        |
| R806   | 1-247-903-00 | CARBON      | 1M 5% 1/6W   |                                         |                       |                           |        |
| R807   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   |                                         |                       |                           |        |
| R808   | 1-247-835-00 | CARBON      | 1.5K 5% 1/6W |                                         |                       |                           |        |
| R809   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   |                                         |                       |                           |        |
| R810   | 1-247-864-00 | CARBON      | 24K 5% 1/6W  |                                         |                       |                           |        |
| R811   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  |                                         |                       |                           |        |
| R812   | 1-247-883-00 | CARBON      | 150K 5% 1/6W |                                         |                       |                           |        |
| R813   | 1-247-835-00 | CARBON      | 1.5K 5% 1/6W |                                         |                       |                           |        |
| R814   | 1-247-829-00 | CARBON      | 820 5% 1/6W  |                                         |                       |                           |        |

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When indicating parts by reference number, please include the board name.

| Ref.No                                   | Part No.     | Description       | Remark  | Ref.No        | Part No.     | Description      | Remark     |
|------------------------------------------|--------------|-------------------|---------|---------------|--------------|------------------|------------|
| <u>SWITCH</u>                            |              |                   |         | C145          | 1-130-489-00 | MYLAR 0.033MF    | 5% 50V     |
| S101                                     | 1-554-174-00 | SWITCH, KEY BOARD |         | C154          | 1-102-525-00 | CERAMIC 68PF     | 5% 50V     |
| S102                                     | 1-554-174-00 | SWITCH, KEY BOARD |         | C201          | 1-123-386-00 | ELECT 33MF       | 20% 100V   |
| S103                                     | 1-554-174-00 | SWITCH, KEY BOARD |         | C202          | 1-101-361-00 | CERAMIC 150PF    | 5% 50V     |
| S104                                     | 1-554-088-00 | SWITCH, KEY BOARD |         | C204          | 1-102-074-00 | CERAMIC 0.001MF  | 10% 50V    |
| S107                                     | 1-554-174-00 | SWITCH, KEY BOARD |         | C205          | 1-123-381-00 | ELECT 2.2MF      | 20% 50V    |
| S108                                     | 1-554-174-00 | SWITCH, KEY BOARD |         | C206          | 1-102-971-00 | CERAMIC 82PF     | 5% 50V     |
| S109                                     | 1-554-174-00 | SWITCH, KEY BOARD |         | C207          | 1-123-379-00 | ELECT 0.47MF     | 20% 50V    |
| S110                                     | 1-554-174-00 | SWITCH, KEY BOARD |         | C208          | 1-130-477-00 | MYLAR 0.0033MF   | 5% 50V     |
| S111                                     | 1-553-751-00 | SWITCH, SLIDE     |         | C209          | 1-130-489-00 | MYLAR 0.033MF    | 5% 50V     |
| S112                                     | 1-553-754-00 | SWITCH, SLIDE     |         | C210          | 1-130-489-00 | MYLAR 0.033MF    | 5% 50V     |
| S113                                     | 1-553-716-00 | SWITCH, SLIDE     |         | C214          | 1-123-356-00 | ELECT 10MF       | 20% 16V    |
| *****                                    |              |                   |         | C215          | 1-102-074-00 | CERAMIC 0.001MF  | 10% 50V    |
| *A-6721-232-A TU-77 BOARD, COMPLETE      |              |                   |         | C220          | 1-123-330-00 | ELECT 22MF       | 20% 16V    |
| *****                                    |              |                   |         | C222          | 1-102-510-00 | CERAMIC 12PF     | 5% 50V     |
| *3-684-399-01 CASE (MAIN), SHIELD, TU    |              |                   |         | C223          | 1-101-837-00 | CERAMIC 0.5PF    | 0.25PF 50V |
| *3-685-221-01 LID, SHIELD CASE, TU       |              |                   |         | C224          | 1-102-525-00 | CERAMIC 68PF     | 5% 50V     |
| *3-685-222-01 LID, REAR, SHIELD CASE, TU |              |                   |         | C225          | 1-101-837-00 | CERAMIC 0.5PF    | 0.25PF 50V |
| <u>CAPACITOR</u>                         |              |                   |         | C226          | 1-102-510-00 | CERAMIC 12PF     | 5% 50V     |
| C101                                     | 1-123-307-00 | ELECT 100MF       | 20% 10V | C230          | 1-123-380-00 | ELECT 1MF        | 20% 50V    |
| C109                                     | 1-102-114-00 | CERAMIC 470PF     | 10% 50V | C231          | 1-123-356-00 | ELECT 10MF       | 20% 16V    |
| C110                                     | 1-161-059-00 | CERAMIC 0.047MF   | 10% 25V | C232          | 1-102-121-00 | CERAMIC 0.0022MF | 10% 50V    |
| C111                                     | 1-123-308-00 | ELECT 220MF       | 20% 10V | C233          | 1-121-257-00 | ELECT 4.7MF      | 16V        |
| C112                                     | 1-102-121-00 | CERAMIC 0.0022MF  | 10% 50V | C234          | 1-102-884-00 | CERAMIC 33PF     | 5% 50V     |
| C113                                     | 1-102-121-00 | CERAMIC 0.0022MF  | 10% 50V | C235          | 1-123-381-00 | ELECT 2.2MF      | 20% 50V    |
| C114                                     | 1-101-004-00 | CERAMIC 0.01MF    | 50V     | C236          | 1-102-121-00 | CERAMIC 0.0022MF | 10% 50V    |
| C115                                     | 1-102-121-00 | CERAMIC 0.0022MF  | 10% 50V | C243          | 1-102-074-00 | CERAMIC 0.001MF  | 10% 50V    |
| C116                                     | 1-102-121-00 | CERAMIC 0.0022MF  | 10% 50V | C244          | 1-130-511-51 | MYLAR 0.0039MF   | 10% 50V    |
| C117                                     | 1-161-053-00 | CERAMIC 0.015MF   | 10% 25V | C251          | 1-102-816-00 | CERAMIC 120PF    | 5% 50V     |
| C118                                     | 1-161-053-00 | CERAMIC 0.015MF   | 10% 25V | C252          | 1-102-106-00 | CERAMIC 100PF    | 10% 50V    |
| C119                                     | 1-102-112-00 | CERAMIC 330PF     | 10% 50V | C253          | 1-123-379-00 | ELECT 0.47MF     | 20% 50V    |
| C120                                     | 1-123-309-00 | ELECT 330MF       | 20% 10V | C551          | 1-123-369-00 | ELECT 4.7MF      | 20% 25V    |
| C121                                     | 1-102-851-00 | CERAMIC 15PF      | 5% 50V  | C552          | 1-123-356-00 | ELECT 10MF       | 20% 16V    |
| C122                                     | 1-102-074-00 | CERAMIC 0.001MF   | 10% 50V | C553          | 1-123-356-00 | ELECT 10MF       | 20% 16V    |
| C123                                     | 1-123-309-00 | ELECT 330MF       | 20% 10V | C556          | 1-123-330-00 | ELECT 22MF       | 20% 16V    |
| C124                                     | 1-123-380-00 | ELECT 1MF         | 20% 50V | C560          | 1-130-481-00 | MYLAR 0.0068MF   | 5% 50V     |
| C125                                     | 1-136-153-00 | MYLAR 0.01MF      | 10% 50V | C561          | 1-130-477-00 | MYLAR 0.0033MF   | 5% 50V     |
| C127                                     | 1-136-165-00 | MYLAR 0.1MF       | 10% 50V | C601          | 1-123-356-00 | ELECT 10MF       | 20% 16V    |
| C128                                     | 1-123-380-00 | ELECT 1MF         | 20% 50V | C602          | 1-123-356-00 | ELECT 10MF       | 20% 16V    |
| C129                                     | 1-130-491-00 | MYLAR 0.047MF     | 5% 50V  | C603          | 1-123-318-00 | ELECT 33MF       | 20% 16V    |
| C130                                     | 1-123-330-00 | ELECT 22MF        | 20% 16V | C607          | 1-161-052-00 | CERAMIC 0.012MF  | 10% 25V    |
| C131                                     | 1-102-121-00 | CERAMIC 0.0022MF  | 10% 50V | C608          | 1-161-052-00 | CERAMIC 0.012MF  | 10% 25V    |
| C132                                     | 1-123-379-00 | ELECT 0.47MF      | 20% 50V | C609          | 1-102-114-00 | CERAMIC 470PF    | 10% 50V    |
| C133                                     | 1-161-013-00 | CERAMIC 0.01MF    | 10% 25V | C610          | 1-102-114-00 | CERAMIC 470PF    | 10% 50V    |
| C134                                     | 1-102-760-00 | CERAMIC 68PF      | 5% 50V  | C611          | 1-161-059-00 | CERAMIC 0.047MF  | 10% 25V    |
| C136                                     | 1-102-121-00 | CERAMIC 0.0022MF  | 10% 50V | C613          | 1-123-356-00 | ELECT 10MF       | 20% 16V    |
| C137                                     | 1-161-059-00 | CERAMIC 0.047MF   | 10% 25V | C615          | 1-123-356-00 | ELECT 10MF       | 20% 16V    |
| C138                                     | 1-102-893-00 | CERAMIC 18PF      | 5% 50V  | C618          | 1-123-318-00 | ELECT 33MF       | 20% 16V    |
| C140                                     | 1-102-525-00 | CERAMIC 68PF      | 5% 50V  | <u>FILTER</u> |              |                  |            |
|                                          |              |                   |         | CF401         | 1-527-943-00 | FILTER, CERAMIC  |            |
|                                          |              |                   |         | CF402         | 1-409-332-00 | CERAMIC TRAP     |            |

When indicating parts by reference number, please include the board name.

| Ref.No           | Part No.      | Description           | Remark | Ref.No            | Part No.     | Description         | Remark |
|------------------|---------------|-----------------------|--------|-------------------|--------------|---------------------|--------|
| <b>CONNECTOR</b> |               |                       |        | <b>TRANSISTOR</b> |              |                     |        |
| CN501            | *1-560-892-00 | PIN, CONNECTOR 4P     |        | Q103              | 8-729-883-92 | TRANSISTOR 2SC2839  |        |
| CN502            | *1-560-899-00 | PIN, CONNECTOR 11P    |        | Q104              | 8-729-117-54 | TRANSISTOR 2SA1175  |        |
| CN503            | *1-560-893-00 | PIN, CONNECTOR 5P     |        | Q201              | 8-729-603-30 | TRANSISTOR 2SC403SP |        |
| CN504            | *1-560-891-00 | PIN, CONNECTOR 3P     |        | Q202              | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| CN505            | *1-560-899-00 | PIN, CONNECTOR 11P    |        | Q203              | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| CN506            | *1-560-891-00 | PIN, CONNECTOR 3P     |        | Q208              | 8-729-117-54 | TRANSISTOR 2SA1175  |        |
| CN507            | *1-560-892-00 | PIN, CONNECTOR 4P     |        | Q209              | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| CN508            | *1-560-890-00 | PIN, CONNECTOR 2P     |        | Q210              | 8-729-178-54 | TRANSISTOR 2SC2785  |        |
| CN509            | *1-560-892-00 | PIN, CONNECTOR 4P     |        | Q551              | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| CN510            | *1-560-891-00 | PIN, CONNECTOR 3P     |        | Q552              | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| CN511            | *1-560-896-00 | PIN, CONNECTOR 8P     |        | Q555              | 8-729-245-83 | TRANSISTOR 2SC2458  |        |
| CN512            | *1-560-890-00 | PIN, CONNECTOR 2P     |        | Q650              | 8-729-900-36 | TRANSISTOR DTC124ES |        |
|                  |               |                       |        | Q651              | 8-729-178-54 | TRANSISTOR 2SC2785  |        |
| <b>DIODE</b>     |               |                       |        | <b>RESISTOR</b>   |              |                     |        |
| D151             | 8-719-911-19  | DIODE 1SS119          |        | R110              | 1-247-815-00 | CARBON 220 5% 1/6W  |        |
| D152             | 8-719-911-19  | DIODE 1SS119          |        | R111              | 1-249-421-11 | CARBON 2.2K 5% 1/6W |        |
| D153             | 8-719-911-19  | DIODE 1SS119          |        | R112              | 1-247-853-00 | CARBON 8.2K 5% 1/6W |        |
| D154             | 8-719-911-19  | DIODE 1SS119          |        | R113              | 1-247-833-00 | CARBON 1.2K 5% 1/6W |        |
| D155             | 8-719-911-19  | DIODE 1SS119          |        | R114              | 1-247-803-00 | CARBON 68 5% 1/6W   |        |
| D156             | 8-719-911-19  | DIODE 1SS119          |        | R115              | 1-247-817-00 | CARBON 270 5% 1/6W  |        |
| D202             | 8-719-911-19  | DIODE 1SS119          |        | R116              | 1-247-801-00 | CARBON 56 5% 1/6W   |        |
| D204             | 8-719-911-19  | DIODE 1SS119          |        | R117              | 1-247-853-00 | CARBON 8.2K 5% 1/6W |        |
| D601             | 8-719-911-19  | DIODE 1SS119          |        | R119              | 1-247-891-00 | CARBON 330K 5% 1/6W |        |
| D602             | 8-719-911-19  | DIODE 1SS119          |        | R120              | 1-247-891-00 | CARBON 330K 5% 1/6W |        |
| D605             | 8-719-911-19  | DIODE 1SS119          |        | R121              | 1-247-867-00 | CARBON 33K 5% 1/6W  |        |
| D606             | 8-719-911-19  | DIODE 1SS119          |        | R122              | 1-247-867-00 | CARBON 33K 5% 1/6W  |        |
| D607             | 8-719-200-02  | DIODE 10E-2           |        | R123              | 1-247-833-00 | CARBON 1.2K 5% 1/6W |        |
| D608             | 8-719-200-02  | DIODE 10E-2           |        | R125              | 1-247-883-00 | CARBON 150K 5% 1/6W |        |
| D650             | 8-719-911-19  | DIODE 1SS119          |        | R126              | 1-247-819-00 | CARBON 330 5% 1/6W  |        |
| D651             | 8-719-911-19  | DIODE 1SS119          |        | R127              | 1-247-815-00 | CARBON 220 5% 1/6W  |        |
| <b>IC</b>        |               |                       |        | R128              | 1-247-855-00 | CARBON 10K 5% 1/6W  |        |
| IC101            | 8-752-001-41  | IC CX20014A           |        | R129              | 1-247-875-00 | CARBON 68K 5% 1/6W  |        |
| IC102            | 8-752-007-30  | IC CX20073            |        | R146              | 1-247-819-00 | CARBON 330 5% 1/6W  |        |
| IC201            | 8-759-800-12  | IC LA7920             |        | R147              | 1-247-855-00 | CARBON 10K 5% 1/6W  |        |
| IC203            | 8-759-157-40  | IC UPC574J            |        | R148              | 1-247-855-00 | CARBON 10K 5% 1/6W  |        |
| IC601            | 8-759-135-80  | IC UPC358C            |        | R149              | 1-247-837-00 | CARBON 1.8K 5% 1/6W |        |
| <b>COIL</b>      |               |                       |        | R151              | 1-247-857-00 | CARBON 12K 5% 1/6W  |        |
| L102             | 1-408-596-00  | MICRO INDUCTOR 2.7UH  |        | R152              | 1-247-857-00 | CARBON 12K 5% 1/6W  |        |
| L103             | 1-408-411-00  | MICRO INDUCTOR 15UH   |        | R153              | 1-247-847-00 | CARBON 4.7K 5% 1/6W |        |
| L105             | 1-408-411-00  | MICRO INDUCTOR 15UH   |        | R154              | 1-247-847-00 | CARBON 4.7K 5% 1/6W |        |
| L106             | 1-408-709-00  | MICRO INDUCTOR 0.68UH |        | R159              | 1-247-819-00 | CARBON 330 5% 1/6W  |        |
| L107             | 1-408-621-00  | MICRO INDUCTOR 330UH  |        | R163              | 1-247-844-00 | CARBON 3.6K 5% 1/6W |        |
| L201             | 1-407-510-00  | MICRO INDUCTOR 33MMH  |        | R201              | 1-249-421-11 | CARBON 2.2K 5% 1/6W |        |
| L202             | 1-408-421-00  | MICRO INDUCTOR 100UH  |        | R202              | 1-247-855-00 | CARBON 10K 5% 1/6W  |        |
| L205             | 1-408-602-00  | MICRO INDUCTOR 8.2UH  |        | R203              | 1-247-831-00 | CARBON 1K 5% 1/6W   |        |
| L206             | 1-405-873-00  | COIL, OSCILLATOR      |        | R204              | 1-247-855-00 | CARBON 10K 5% 1/6W  |        |
| L403             | 1-408-602-00  | MICRO INDUCTOR 8.2UH  |        | R205              | 1-247-855-00 | CARBON 10K 5% 1/6W  |        |
|                  |               |                       |        | R206              | 1-247-033-00 | CARBON 22K 5% 1/6W  |        |
|                  |               |                       |        | R208              | 1-247-863-00 | CARBON 22K 5% 1/6W  |        |
|                  |               |                       |        | R209              | 1-247-863-00 | CARBON 22K 5% 1/6W  |        |

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| Ref.No | Part No.     | Description | Remark       | Ref.No | Part No.     | Description                                | Remark |
|--------|--------------|-------------|--------------|--------|--------------|--------------------------------------------|--------|
| R210   | 1-247-847-00 | CARBON      | 4.7K 5% 1/6W | R658   | 1-247-845-00 | CARBON 3.9K 5% 1/6W                        |        |
| R211   | 1-247-821-00 | CARBON      | 390 5% 1/6W  |        |              | RF MODULATOR                               |        |
| R212   | 1-247-879-00 | CARBON      | 100K 5% 1/6W |        |              | RFU0001-461-446-11 MODULATOR, RF (RFU-739) |        |
| R213   | 1-247-807-00 | CARBON      | 100 5% 1/6W  |        |              | VARIABLE RESISTOR                          |        |
| R214   | 1-247-807-00 | CARBON      | 100 5% 1/6W  |        |              |                                            |        |
| R215   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  | RV101  | 1-228-993-00 | RES, ADJ, CARBON 4.7K                      |        |
| R216   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  | RV104  | 1-228-993-00 | RES, ADJ, CARBON 4.7K                      |        |
| R217   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  | RV202  | 1-228-994-00 | RES, ADJ, CARBON 10K                       |        |
| R218   | 1-247-891-00 | CARBON      | 330K 5% 1/6W | RV203  | 1-228-998-00 | RES, ADJ, CARBON 220K                      |        |
| R220   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | RV701  | 1-228-989-00 | RES, ADJ, CARBON 470                       |        |
| R221   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | RV801  | 1-228-995-00 | RES, ADJ, CARBON 22K                       |        |
| R226   | 1-247-895-00 | CARBON      | 470K 5% 1/6W |        |              | SWITCH                                     |        |
| R227   | 1-247-793-00 | CARBON      | 27 5% 1/6W   | S301   | 1-553-716-00 | SWITCH, SLIDE                              |        |
| R251   | 1-247-831-00 | CARBON      | 1K 5% 1/6W   | S302   | 1-554-174-00 | SWITCH, KEY BOARD                          |        |
| R252   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | S303   | 1-554-174-00 | SWITCH, KEY BOARD                          |        |
| R253   | 1-247-887-00 | CARBON      | 220K 5% 1/6W | S304   | 1-554-174-00 | SWITCH, KEY BOARD                          |        |
| R255   | 1-247-827-00 | CARBON      | 680 5% 1/6W  | S305   | 1-554-174-00 | SWITCH, KEY BOARD                          |        |
| R301   | 1-215-423-00 | METAL       | 1.2K 1% 1/6W | S308   | 1-554-174-00 | SWITCH, KEY BOARD                          |        |
| R302   | 1-215-427-00 | METAL       | 1.8K 1% 1/6W | S309   | 1-554-174-00 | SWITCH, KEY BOARD                          |        |
| R304   | 1-215-433-00 | METAL       | 3.3K 1% 1/6W | S310   | 1-553-716-00 | SWITCH, SLIDE                              |        |
| R305   | 1-215-444-00 | METAL       | 9.1K 1% 1/6W | S321   | 1-553-716-00 | SWITCH, SLIDE                              |        |
| R306   | 1-215-423-00 | METAL       | 1.2K 1% 1/6W | S322   | 1-553-716-00 | SWITCH, SLIDE                              |        |
| R311   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  |        |              | FILTER                                     |        |
| R312   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  | SWF001 | 1-404-479-00 | SAWF                                       |        |
| R313   | 1-247-889-00 | CARBON      | 270K 5% 1/6W |        |              | TRANSFORMER                                |        |
| R553   | 1-247-850-00 | CARBON      | 6.2K 5% 1/6W | T101   | 1-404-505-00 | COIL                                       |        |
| R554   | 1-247-850-00 | CARBON      | 6.2K 5% 1/6W | T102   | 1-404-467-00 | COIL, VIF                                  |        |
| R555   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W | T103   | 1-404-467-00 | COIL, VIF                                  |        |
| R556   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W | T205   | 1-404-012-00 | COIL                                       |        |
| R557   | 1-247-873-00 | CARBON      | 56K 5% 1/6W  | T206   | 1-404-489-00 | COIL                                       |        |
| R558   | 1-247-859-00 | CARBON      | 15K 5% 1/6W  |        |              | TUNER                                      |        |
| R559   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W |        |              | TU0001-1-463-522-21 TUNER, ET (BT-808)     |        |
| R561   | 1-247-843-00 | CARBON      | 3.3K 5% 1/6W |        |              | *****                                      |        |
| R566   | 1-249-421-11 | CARBON      | 2.2K 5% 1/6W |        |              | *A-6721-233-A MP-7 BOARD, COMPLETE         |        |
| R602   | 1-247-861-00 | CARBON      | 18K 5% 1/6W  |        |              | *****                                      |        |
| R603   | 1-247-851-00 | CARBON      | 6.8K 5% 1/6W |        |              | CAPACITOR                                  |        |
| R604   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  | C801   | 1-123-356-00 | ELECT 10MF 20% 16V                         |        |
| R605   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  | C802   | 1-101-004-00 | CERAMIC 0.01MF 50V                         |        |
| R606   | 1-247-863-00 | CARBON      | 22K 5% 1/6W  | C803   | 1-130-487-00 | MYLAR 0.022MF 5% 50V                       |        |
| R607   | 1-247-875-00 | CARBON      | 68K 5% 1/6W  | C804   | 1-123-356-00 | ELECT 10MF 20% 16V                         |        |
| R608   | 1-247-865-00 | CARBON      | 27K 5% 1/6W  | C805   | 1-123-356-00 | ELECT 10MF 20% 16V                         |        |
| R609   | 1-247-865-00 | CARBON      | 27K 5% 1/6W  | C808   | 1-123-356-00 | ELECT 10MF 20% 16V                         |        |
| R610   | 1-247-870-00 | CARBON      | 43K 5% 1/6W  | C809   | 1-130-489-00 | MYLAR 0.033MF 5% 50V                       |        |
| R611   | 1-247-870-00 | CARBON      | 43K 5% 1/6W  | C810   | 1-123-356-00 | ELECT 10MF 20% 16V                         |        |
| R621   | 1-247-849-00 | CARBON      | 5.6K 5% 1/6W | C811   | 1-130-021-00 | FILM 0.0018MF 5% 50V                       |        |
| R622   | 1-247-849-00 | CARBON      | 5.6K 5% 1/6W |        |              |                                            |        |
| R651   | 1-247-851-00 | CARBON      | 6.8K 5% 1/6W |        |              |                                            |        |
| R652   | 1-247-771-00 | CARBON      | 3.3 5% 1/6W  |        |              |                                            |        |
| R653   | 1-247-851-00 | CARBON      | 6.8K 5% 1/6W |        |              |                                            |        |
| R654   | 1-247-771-00 | CARBON      | 3.3 5% 1/6W  |        |              |                                            |        |
| R655   | 1-247-827-00 | CARBON      | 680 5% 1/6W  |        |              |                                            |        |
| R656   | 1-247-827-00 | CARBON      | 680 5% 1/6W  |        |              |                                            |        |
| R657   | 1-247-855-00 | CARBON      | 10K 5% 1/6W  |        |              |                                            |        |

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| Ref.No           | Part No.      | Description       | Remark           | Ref.No                                          | Part No.     | Description         | Remark |
|------------------|---------------|-------------------|------------------|-------------------------------------------------|--------------|---------------------|--------|
| C812             | 1-123-380-00  | ELECT             | 1MF 20% 50V      | IC830                                           | 8-759-400-88 | IC AN6291           |        |
| C813             | 1-123-356-00  | ELECT             | 10MF 20% 16V     | IC831                                           | 8-759-145-58 | IC UPC4558C         |        |
| C814             | 1-136-165-00  | MYLAR             | 0.1MF 10% 50V    | IC870                                           | 8-759-602-48 | IC M5201L           |        |
| C815             | 1-123-356-00  | ELECT             | 10MF 20% 16V     | <u>TRANSISTOR</u>                               |              |                     |        |
| C816             | 1-123-356-00  | ELECT             | 10MF 20% 16V     | Q832                                            | 8-729-178-54 | TRANSISTOR 2SC2785  |        |
| C817             | 1-123-356-00  | ELECT             | 10MF 20% 16V     | Q833                                            | 8-729-178-54 | TRANSISTOR 2SC2785  |        |
| C818             | 1-123-369-00  | ELECT             | 4.7MF 20% 25V    | Q870                                            | 8-729-178-54 | TRANSISTOR 2SC2785  |        |
| C830             | 1-123-308-00  | ELECT             | 220MF 20% 10V    | Q871                                            | 8-729-178-54 | TRANSISTOR 2SC2785  |        |
| C832             | 1-130-022-00  | FILM              | 0.0022MF 10% 50V | <u>RESISTOR</u>                                 |              |                     |        |
| C833             | 1-131-343-00  | TANTALUM          | 0.22MF 10% 35V   | R802                                            | 1-215-469-00 | METAL 100K 1% 1/6W  |        |
| C834             | 1-131-343-00  | TANTALUM          | 0.22MF 10% 35V   | R803                                            | 1-215-469-00 | METAL 100K 1% 1/6W  |        |
| C835             | 1-130-022-00  | FILM              | 0.0022MF 10% 50V | R804                                            | 1-247-879-00 | CARBON 100K 5% 1/6W |        |
| C836             | 1-123-356-00  | ELECT             | 10MF 20% 16V     | R805                                            | 1-247-831-00 | CARBON 1K 5% 1/6W   |        |
| C837             | 1-123-380-00  | ELECT             | 1MF 20% 50V      | R806                                            | 1-247-831-00 | CARBON 1K 5% 1/6W   |        |
| C838             | 1-130-022-00  | FILM              | 0.0022MF 10% 50V | R807                                            | 1-247-831-00 | CARBON 1K 5% 1/6W   |        |
| C840             | 1-136-147-00  | FILM              | 0.0033MF 10% 50V | R808                                            | 1-247-855-00 | CARBON 10K 5% 1/6W  |        |
| C841             | 1-136-147-00  | FILM              | 0.0033MF 10% 50V | R809                                            | 1-247-825-00 | CARBON 560 5% 1/6W  |        |
| C842             | 1-131-345-00  | TANTALUM          | 0.47MF 10% 35V   | R810                                            | 1-249-421-11 | CARBON 2.2K 5% 1/6W |        |
| C843             | 1-130-994-11  | FILM              | 0.033MF 10% 50V  | R811                                            | 1-249-421-11 | CARBON 2.2K 5% 1/6W |        |
| C844             | 1-136-147-00  | FILM              | 0.0033MF 10% 50V | R813                                            | 1-215-430-00 | METAL 2.4K 1% 1/6W  |        |
| C845             | 1-136-147-00  | FILM              | 0.0033MF 10% 50V | R814                                            | 1-247-853-00 | CARBON 8.2K 5% 1/6W |        |
| C846             | 1-131-371-00  | TANTALUM          | 10MF 10% 16V     | R815                                            | 1-247-843-00 | CARBON 3.3K 5% 1/6W |        |
| C847             | 1-123-306-00  | ELECT             | 47MF 20% 10V     | R817                                            | 1-247-859-00 | CARBON 15K 5% 1/6W  |        |
| C848             | 1-102-125-00  | CERAMIC           | 0.0047MF 10% 50V | R818                                            | 1-247-859-00 | CARBON 15K 5% 1/6W  |        |
| C849             | 1-123-380-00  | ELECT             | 1MF 20% 50V      | R819                                            | 1-247-903-00 | CARBON 1M 5% 1/6W   |        |
| C850             | 1-123-380-00  | ELECT             | 1MF 20% 50V      | <del>R832 1-247-811-00 CARBON 33K 5% 1/6W</del> |              |                     |        |
| C851             | 1-123-330-00  | ELECT             | 22MF 20% 16V     | R834                                            | 1-247-867-00 | CARBON 33K 5% 1/6W  |        |
| C852             | 1-123-380-00  | ELECT             | 1MF 20% 50V      | R835                                            | 1-247-843-00 | CARBON 3.3K 5% 1/6W |        |
| C853             | 1-123-356-00  | ELECT             | 10MF 20% 16V     | R836                                            | 1-247-885-00 | CARBON 180K 5% 1/6W |        |
| C854             | 1-123-306-00  | ELECT             | 47MF 20% 10V     | R837                                            | 1-247-844-00 | CARBON 3.6K 5% 1/6W |        |
| C855             | 1-123-382-00  | ELECT             | 3.3MF 20% 50V    | R838                                            | 1-247-885-00 | CARBON 180K 5% 1/6W |        |
| C856             | 1-102-125-00  | CERAMIC           | 0.0047MF 10% 50V | R839                                            | 1-215-421-00 | METAL 1K 1% 1/6W    |        |
| C857             | 1-131-368-00  | TANTALUM          | 3.3MF 10% 16V    | R840                                            | 1-247-811-00 | CARBON 150 5% 1/6W  |        |
| C858             | 1-130-030-00  | FILM              | 0.01MF 10% 50V   | R841                                            | 1-247-885-00 | CARBON 180K 5% 1/6W |        |
| C870             | 1-130-497-00  | MYLAR             | 0.15MF 10% 50V   | R842                                            | 1-247-848-00 | CARBON 5.1K 5% 1/6W |        |
| C871             | 1-130-491-00  | MYLAR             | 0.047MF 5% 50V   | R843                                            | 1-247-885-00 | CARBON 180K 5% 1/6W |        |
| C872             | 1-130-475-00  | MYLAR             | 0.0022MF 5% 50V  | R844                                            | 1-247-844-00 | CARBON 3.6K 5% 1/6W |        |
| C873             | 1-130-471-00  | MYLAR             | 0.001MF 5% 50V   | R845                                            | 1-247-893-00 | CARBON 390K 5% 1/6W |        |
| C874             | 1-123-380-00  | ELECT             | 1MF 20% 50V      | R846                                            | 1-247-863-00 | CARBON 22K 5% 1/6W  |        |
| C876             | 1-102-121-00  | CERAMIC           | 0.0022MF 10% 50V | R847                                            | 1-247-865-00 | CARBON 27K 5% 1/6W  |        |
| C877             | 1-123-380-00  | ELECT             | 1MF 20% 50V      | R848                                            | 1-247-843-00 | CARBON 3.3K 5% 1/6W |        |
| <u>CONNECTOR</u> |               |                   |                  | R849                                            | 1-247-843-00 | CARBON 3.3K 5% 1/6W |        |
| CN801            | *1-560-896-00 | PIN, CONNECTOR 3P |                  | R850                                            | 1-247-847-00 | CARBON 4.7K 5% 1/6W |        |
| CN802            | *1-560-893-00 | PIN, CONNECTOR 5P |                  | R851                                            | 1-247-847-00 | CARBON 4.7K 5% 1/6W |        |
| <u>DIODE</u>     |               |                   |                  | R852                                            | 1-247-847-00 | CARBON 4.7K 5% 1/6W |        |
| D801             | 8-719-911-19  | DIODE 1SS119      |                  | R853                                            | 1-247-847-00 | CARBON 4.7K 5% 1/6W |        |
| D830             | 8-719-102-74  | DIODE RD6.2EN2    |                  | R854                                            | 1-247-811-00 | CARBON 150 5% 1/6W  |        |
| <u>IC</u>        |               |                   |                  | R855                                            | 1-247-869-00 | CARBON 39K 5% 1/6W  |        |
| IC801            | 8-752-011-20  | IC CX20112        |                  | R856                                            | 1-247-887-00 | CARBON 220K 5% 1/6W |        |
|                  |               |                   |                  | R857                                            | 1-247-843-00 | CARBON 3.3K 5% 1/6W |        |
|                  |               |                   |                  | R858                                            | 1-247-893-00 | CARBON 390K 5% 1/6W |        |

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

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When indicating parts by reference number, please include the board name.



**MP-7****PS-40****PS-41****PS-39**

| Ref.No | Part No.     | Description         | Remark |
|--------|--------------|---------------------|--------|
| R859   | 1-247-855-00 | CARBON 10K 5% 1/6W  |        |
| R862   | 1-247-843-00 | CARBON 3.3K 5% 1/6W |        |
| R870   | 1-247-869-00 | CARBON 39K 5% 1/6W  |        |
| R871   | 1-247-865-00 | CARBON 27K 5% 1/6W  |        |
| R872   | 1-247-853-00 | CARBON 8.2K 5% 1/6W |        |
| R873   | 1-247-863-00 | CARBON 22K 5% 1/6W  |        |
| R874   | 1-247-863-00 | CARBON 22K 5% 1/6W  |        |
| R875   | 1-247-855-00 | CARBON 10K 5% 1/6W  |        |
| R876   | 1-247-845-00 | CARBON 3.9K 5% 1/6W |        |
| R877   | 1-247-863-00 | CARBON 22K 5% 1/6W  |        |
| R878   | 1-247-851-00 | CARBON 6.8K 5% 1/6W |        |
| R881   | 1-247-871-00 | CARBON 47K 5% 1/6W  |        |

**VARIABLE RESISTOR**

|       |              |                       |
|-------|--------------|-----------------------|
| RV802 | 1-228-996-00 | RES, ADJ, CARBON 47K  |
| RV803 | 1-228-997-00 | RES, ADJ, CARBON 100K |
| RV804 | 1-228-999-00 | RES, ADJ, CARBON 470K |
| RV805 | 1-228-994-00 | RES, ADJ, CARBON 10K  |
| RV806 | 1-228-994-00 | RES, ADJ, CARBON 10K  |
| RV830 | 1-228-991-00 | RES, ADJ, CARBON 2.2K |
| RV831 | 1-228-995-00 | RES, ADJ, CARBON 22K  |
| RV832 | 1-228-994-00 | RES, ADJ, CARBON 10K  |

\*\*\*\*\*

\*1-612-789-11 PS-40 BOARD  
\*\*\*\*\*

1-533-162-00 HOLDER, FUSE

**CAPACITOR**

|      |              |                               |
|------|--------------|-------------------------------|
| C017 | 1-125-298-00 | ELECT (BLOCK) 10000MF 20% 25V |
| C018 | 1-161-024-00 | CERAMIC 0.082MF 10% 25V       |

**DIODE**

|      |              |                    |
|------|--------------|--------------------|
| D007 | 8-719-230-04 | DIODE ERC01-02FL15 |
| D008 | 8-719-230-04 | DIODE ERC01-02FL15 |
| D009 | 8-719-230-04 | DIODE ERC01-02FL15 |
| D010 | 8-719-230-04 | DIODE ERC01-02FL15 |
| D013 | 8-719-100-97 | DIODE RD30EB1      |

**FUSE**

|      |              |                  |
|------|--------------|------------------|
| F002 | 1-532-557-00 | FUSE, GLASS TUBE |
|------|--------------|------------------|

\*\*\*\*\*

\*1-612-790-11 PS-41 BOARD  
\*\*\*\*\*

**IC**

|        |              |            |
|--------|--------------|------------|
| IC001A | 8-740-954-A1 | IC STK5441 |
|--------|--------------|------------|

\*\*\*\*\*

| Remark | Ref.No | Part No.       | Description                    | Remark |
|--------|--------|----------------|--------------------------------|--------|
|        |        | *A-6723-268-A  | PS-39 BOARD, COMPLETE<br>***** |        |
|        |        |                | <u>CAPACITOR</u>               |        |
|        | C001   | A-1-130-680-00 | FILM 0.1MF 20% 125V            |        |
|        | C003   | A-1-161-742-00 | CERAMIC 0.082MF 20% 400V       |        |
|        | C004   | A-1-123-126-00 | ELECT 3300MF 20% 16V           |        |
|        | C005   | A-1-123-372-00 | ELECT 33MF 20% 63V             |        |
|        | C006   | A-1-123-372-00 | ELECT 33MF 20% 63V             |        |
|        | C007   | A-1-123-348-00 | ELECT 47MF 20% 35V             |        |
|        | C008   | 1-123-332-00   | ELECT 47MF 20% 25V             |        |
|        | C009   | 1-123-381-00   | ELECT 2.2MF 20% 50V            |        |
|        | C010   | 1-123-333-00   | ELECT 100MF 20% 16V            |        |
|        | C011   | 1-123-332-00   | ELECT 47MF 20% 16V             |        |

**CONNECTOR**

|       |               |                   |
|-------|---------------|-------------------|
| CN001 | *1-560-890-00 | PIN, CONNECTOR 2P |
| CN002 | *1-560-890-00 | PIN, CONNECTOR 2P |
| CN003 | *1-560-893-00 | PIN, CONNECTOR 5P |
| CN004 | *1-560-895-00 | PIN, CONNECTOR 7P |
| CN005 | *1-560-897-00 | PIN, CONNECTOR 9P |

**DIODE**

|      |              |               |
|------|--------------|---------------|
| D001 | 8-719-200-02 | DIODE 10E-2   |
| D002 | 8-719-200-02 | DIODE 10E-2   |
| D003 | 8-719-200-02 | DIODE 10E-2   |
| D004 | 8-719-200-02 | DIODE 10E-2   |
| D005 | 8-719-101-14 | DIODE RD36EB1 |

|      |              |                |
|------|--------------|----------------|
| D006 | 8-719-911-19 | DIODE 1SS119   |
| D014 | 8-719-100-38 | DIODE RD6.2ED2 |
| D015 | 8-719-200-02 | DIODE 10E-2    |

**FUSE**

|      |              |                  |
|------|--------------|------------------|
| F001 | 1-532-593-00 | FUSE, GLASS TUBE |
|------|--------------|------------------|

**TRANSISTOR**

|      |              |                   |
|------|--------------|-------------------|
| Q001 | 8-729-103-43 | TRANSISTOR 2SB734 |
|------|--------------|-------------------|

**RESISTOR**

|      |              |                      |
|------|--------------|----------------------|
| R001 | 1-202-723-00 | SOLID 2.2M 10% 1/2W  |
| R002 | 1-212-958-00 | FUSIBLE 10% 1/2W F   |
| R003 | 1-212-934-00 | FUSIBLE 1 5% 1/2W F  |
| R004 | 1-247-859-00 | CARBON 15K 5% 1/6W   |
| R005 | 1-212-958-00 | FUSIBLE 10 5% 1/2W F |

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When indicating parts by reference number, please include the board name.

**PS-39****PS-42****MI-4****TM-82**

| Ref.No                              | Part No.            | Description               | Remark | Ref.No     | Part No.            | Description                 | Remark                   |
|-------------------------------------|---------------------|---------------------------|--------|------------|---------------------|-----------------------------|--------------------------|
| R006                                | 1-247-821-00        | CARBON 390 5% 1/6W        |        | D301       | 8-719-911-19        | DIODE 1SS119                |                          |
| R007                                | 1-247-821-00        | CARBON 390 5% 1/6W        |        | D302       | 8-719-812-31        | DIODE TLR123                |                          |
| <b>R011</b>                         | <b>1-247-807-00</b> | <b>CARBON 100 5% 1/6W</b> |        | D303       | 8-719-200-02        | DIODE 10E-2                 |                          |
| *****                               |                     |                           |        | D304       | 8-719-101-73        | DIODE RD9.1EL2              |                          |
|                                     |                     |                           |        | D305       | 8-719-162-07        | DIODE RD6.2E-B              |                          |
|                                     |                     |                           |        |            |                     |                             |                          |
| *1-612-791-11 PS-42 BOARD           |                     |                           |        | D306       | 8-719-101-04        | DIODE RD33EB2               |                          |
| *****                               |                     |                           |        |            |                     |                             |                          |
| SWITCH                              |                     |                           |        | IC         |                     |                             |                          |
|                                     |                     |                           |        |            |                     |                             |                          |
| S002                                | 1-554-377-00        | SWITCH, SLIDE             |        | IC301      | 8-759-103-13        | IC UPD7519CW-206            |                          |
| *****                               |                     |                           |        | INDICATOR  |                     |                             |                          |
|                                     |                     |                           |        |            |                     |                             |                          |
| *1-612-509-11 MI-4 BOARD            |                     |                           |        | ND301      | 1-519-317-11        | INDICATOR TUBE, FLUORESCENT |                          |
| *****                               |                     |                           |        | TRANSISTOR |                     |                             |                          |
|                                     |                     |                           |        |            |                     |                             |                          |
| 1-454-371-11 SOLENOID, PLUNGER      |                     |                           |        | Q201       | <b>8-729-902-11</b> | <b>TRANSISTOR 2SC2081</b>   | <b>00-100-RSS-1 100V</b> |
| DIODE                               |                     |                           |        | Q202       | 8-729-900-38        | TRANSISTOR DTA114EF         |                          |
|                                     |                     |                           |        | Q301       | 8-729-245-83        | TRANSISTOR 2SC2458          |                          |
| PH001                               | 8-719-913-41        | DIODE SPI201-22           |        | Q302       | 8-729-204-83        | TRANSISTOR 2SA1048          |                          |
| RESISTOR                            |                     |                           |        | Q303       | 8-729-245-83        | TRANSISTOR 2SC2458          |                          |
|                                     |                     |                           |        |            |                     |                             |                          |
| R001                                | 1-247-855-00        | CARBON 10K 5% 1/6W        |        | Q304       | <b>8-729-245-83</b> | <b>TRANSISTOR 2SC2458</b>   | <b>00-100-RSS-1 100V</b> |
| R002                                | 1-247-844-00        | CARBON 3.6K 5% 1/6W       |        | RESISTOR   |                     |                             |                          |
| R003                                | 1-247-826-00        | CARBON 620 5% 1/6W        |        |            |                     |                             |                          |
| R004                                | 1-247-867-00        | CARBON 33K 5% 1/6W        |        | R201       | 1-247-835-00        | CARBON 1.5K 5% 1/6W         |                          |
| R005                                | 1-247-859-00        | CARBON 15K 5% 1/6W        |        | R202       | 1-247-855-00        | CARBON 10K 5% 1/6W          |                          |
|                                     |                     |                           |        | R203       | 1-247-873-00        | CARBON 56K 5% 1/6W          |                          |
| S901                                | 1-554-839-11        | SWITCH, LEAF (2 GANG)     |        | R204       | 1-247-827-00        | CARBON 680 5% 1/6W          |                          |
| S902                                | 1-554-839-11        | SWITCH, LEAF (2 GANG)     |        | R301       | 1-247-855-00        | CARBON 10K 5% 1/6W          |                          |
| *****                               |                     |                           |        | R302       | 1-247-879-00        | CARBON 100K 5% 1/6W         |                          |
|                                     |                     |                           |        | R303       | 1-247-871-00        | CARBON 47K 5% 1/6W          |                          |
| *A-6725-437-A TM-82 BOARD, COMPLETE |                     |                           |        | R304       | 1-247-831-00        | CARBON 1K 5% 1/6W           |                          |
| *****                               |                     |                           |        | R305       | 1-247-879-00        | CARBON 100K 5% 1/6W         |                          |
|                                     |                     |                           |        | R306       | 1-247-867-00        | CARBON 33K 5% 1/6W          |                          |
| 3-655-122-00 TIRE, S BRAKE          |                     |                           |        | R307       | 1-247-869-00        | CARBON 39K 5% 1/6W          |                          |
| CAPACITOR                           |                     |                           |        | R308       | 1-247-873-00        | CARBON 56K 5% 1/6W          |                          |
|                                     |                     |                           |        | R309       | 1-247-875-00        | CARBON 68K 5% 1/6W          |                          |
| C301                                | 1-161-279-00        | CERAMIC 10PF 5% 50V       |        | R310       | 1-247-903-00        | CARBON 1M 5% 1/6W           |                          |
| C302                                | 1-161-279-00        | CERAMIC 10PF 5% 50V       |        | R311       | 1-247-863-00        | CARBON 22K 5% 1/6W          |                          |
| C303                                | 1-123-380-00        | ELECT 1MF 20% 50V         |        | R312       | 1-247-867-00        | CARBON 33K 5% 1/6W          |                          |
| C304                                | 1-123-380-00        | ELECT 1MF 20% 50V         |        | R314       | 1-247-875-00        | CARBON 68K 5% 1/6W          |                          |
| C305                                | 1-161-326-00        | CERAMIC 0.0022MF 30% 50V  |        | R315       | 1-247-831-00        | CARBON 1K 5% 1/6W           |                          |
| C306                                | 1-161-059-00        | CERAMIC 0.047MF 20% 25V   |        | R316       | 1-247-831-00        | CARBON 1K 5% 1/6W           |                          |
| C307                                | 1-123-379-00        | ELECT 0.47MF 20% 50V      |        | R318       | 1-247-831-00        | CARBON 1K 5% 1/6W           |                          |
| C309                                | 1-123-356-00        | ELECT 10MF 20% 16V        |        | R319       | 1-247-831-00        | CARBON 1K 5% 1/6W           |                          |
| C310                                | 1-123-382-00        | ELECT 3.3MF 20% 50V       |        | R320       | 1-247-831-00        | CARBON 1K 5% 1/6W           |                          |
| C311                                | 1-123-356-00        | ELECT 10MF 20% 16V        |        | R321       | 1-247-831-00        | CARBON 1K 5% 1/6W           |                          |
| CONNECTOR                           |                     |                           |        | R322       | 1-247-855-00        | CARBON 10K 5% 1/6W          |                          |
|                                     |                     |                           |        | R325       | 1-247-863-00        | CARBON 22K 5% 1/6W          |                          |
| CN305                               | *1-564-014-00       | PIN, CONNECTOR 4P         |        | R326       | 1-247-863-00        | CARBON 22K 5% 1/6W          |                          |
| DIODE                               |                     |                           |        | R327       | 1-247-873-00        | CARBON 56K 5% 1/6W          |                          |
|                                     |                     |                           |        | R328       | 1-247-831-00        | CARBON 1K 5% 1/6W           |                          |
| D204                                | 8-719-000-04        | DIODE MC911               |        | R329       | 1-247-863-00        | CARBON 22K 5% 1/6W          |                          |
|                                     |                     |                           |        | R330       | 1-247-863-00        | CARBON 22K 5% 1/6W          |                          |

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TM-82

LM-8

| Ref.No | Part No.     | Description         | Remark |
|--------|--------------|---------------------|--------|
| R331   | 1-247-863-00 | CARBON 22K 5% 1/6W  |        |
| R332   | 1-247-863-00 | CARBON 22K 5% 1/6W  |        |
| R335   | 1-247-879-00 | CARBON 100K 5% 1/6W |        |
| R336   | 1-247-879-00 | CARBON 100K 5% 1/6W |        |
| R337   | 1-247-863-00 | CARBON 22K 5% 1/6W  |        |
| R338   | 1-247-807-00 | CARBON 100 5% 1/6W  |        |
| R339   | 1-247-807-00 | CARBON 100 5% 1/6W  |        |

VARIABLE RESISTOR

RV201 1-230-426-11 RES, VAR, SLIDE 10K/10K

SWITCH

|      |              |                   |
|------|--------------|-------------------|
| S201 | 1-553-716-00 | SWITCH, SLIDE     |
| S202 | 1-553-754-00 | SWITCH, SLIDE     |
| S204 | 1-554-174-00 | SWITCH, KEY BOARD |
| S205 | 1-554-174-00 | SWITCH, KEY BOARD |
| S206 | 1-554-174-00 | SWITCH, KEY BOARD |
| S207 | 1-554-174-00 | SWITCH, KEY BOARD |
| S208 | 1-554-174-00 | SWITCH, KEY BOARD |
| S209 | 1-554-174-00 | SWITCH, KEY BOARD |
| S210 | 1-554-174-00 | SWITCH, KEY BOARD |
| S211 | 1-554-174-00 | SWITCH, KEY BOARD |
| S212 | 1-554-174-00 | SWITCH, KEY BOARD |
| S213 | 1-554-174-00 | SWITCH, KEY BOARD |
| S214 | 1-554-174-00 | SWITCH, KEY BOARD |
| S215 | 1-554-174-00 | SWITCH, KEY BOARD |

CRYSTAL

X301 1-567-121-00 VIBRATOR, CRYSTAL

\*1-605-071-00 LM-8 BOARD  
\*\*\*\*\*

MISCELLANEOUS  
\*\*\*\*\*

|                   |                                       |
|-------------------|---------------------------------------|
| *A-4910-049-A     | R STATOR (REEL MOTOR) BOARD, COMPLETE |
| 1-520-481-11      | METER, LEVEL                          |
| 1-526-882-00      | OUTLET, AC                            |
| 1-557-480-11      | CORD, POWER                           |
| 8-825-508-11      | HEAD, FE                              |
| 8-838-070-01      | CAPSTAN MOTOR, DC (BHF-1907B)         |
| L901 1-464-503-31 | S COIL SENSOR (SUPPLY)                |
| L902 1-464-491-31 | T COIL SENSOR (TAKE UP)               |
| 1-454-349-51      | SOLENOID PLUNGER (PINCH)              |
| 1-454-371-11      | SOLENOID PLUNGER (BRAKE)              |
| S901 1-554-839-11 | SWITCH (CASSETTE DOWN)                |
| S902 1-554-839-11 | SWITCH (REC PROOF)                    |
| S904 1-554-840-11 | SWITCH, LEAF (CASSETTE ON)            |
| 1-554-842-11      | SWITCH, ANTENNA CHANGE                |
| S993 1-554-840-11 | SWITCH, LEAF (LOAD END)               |

| Ref.No | Part No.     | Description        | Remark |
|--------|--------------|--------------------|--------|
| T901   | 1-448-153-11 | TRANSFORMER, POWER |        |

\*\*\*\*\*  
ACCESSORIES AND PACKING MATERIALS  
\*\*\*\*\*

| Part No.      | Description               | Remark |
|---------------|---------------------------|--------|
| A-6765-480-A  | COMMANDER ASSY            |        |
| 1-513-379-00  | CONVERTER (EAC-25)        |        |
| 1-551-644-41  | CORD, CONNECTION          |        |
| 1-551-734-11  | CORD, CONNECTION (RK-74A) |        |
| 2-383-127-01  | BUTTON, SLIDE             |        |
| 2-387-101-01  | BUTTON, RECORDING         |        |
| 2-387-105-01  | COVER, BATTERY            |        |
| 2-387-106-01  | RUBBER (B), CONTACT       |        |
| 2-387-107-01  | PANEL, COMMANDER (FRONT)  |        |
| 2-387-110-01  | CASE (LOWER), COMMANDER   |        |
| 2-387-111-01  | RUBBER (A), CONTACT       |        |
| 2-387-112-21  | CASE (UPPER), COMMANDER   |        |
| 2-387-113-11  | PLATE, COLOR              |        |
| *3-677-503-00 | SHEET, PROTECTION         |        |
| *3-693-452-01 | INDIVIDUAL CARTON         |        |
| *3-693-455-01 | CUSHION (LOWER)           |        |
| *3-693-456-01 | CUSHION (UPPER)           |        |
| 4-350-925-00  | TERMINAL (C), BATTERY     |        |

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## SECTION 7 ADJUSTMENTS

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# 1. PREPARATION FOR MECHANICAL SECTION CHECK, ADJUSTMENT AND REPLACEMENT

## 1-1. DISASSEMBLY OF CABINET

- ① Remove the four case set screws.
- ② Remove the upper case in the direction indicated by the arrow **A**.
- ③ Remove the twelve screws BVTT3×8), then remove the lower case.
- ④ Remove the three screws (BVTT3×8).
- ⑤ Remove the front panel in the direction indicated by the arrow **B**.

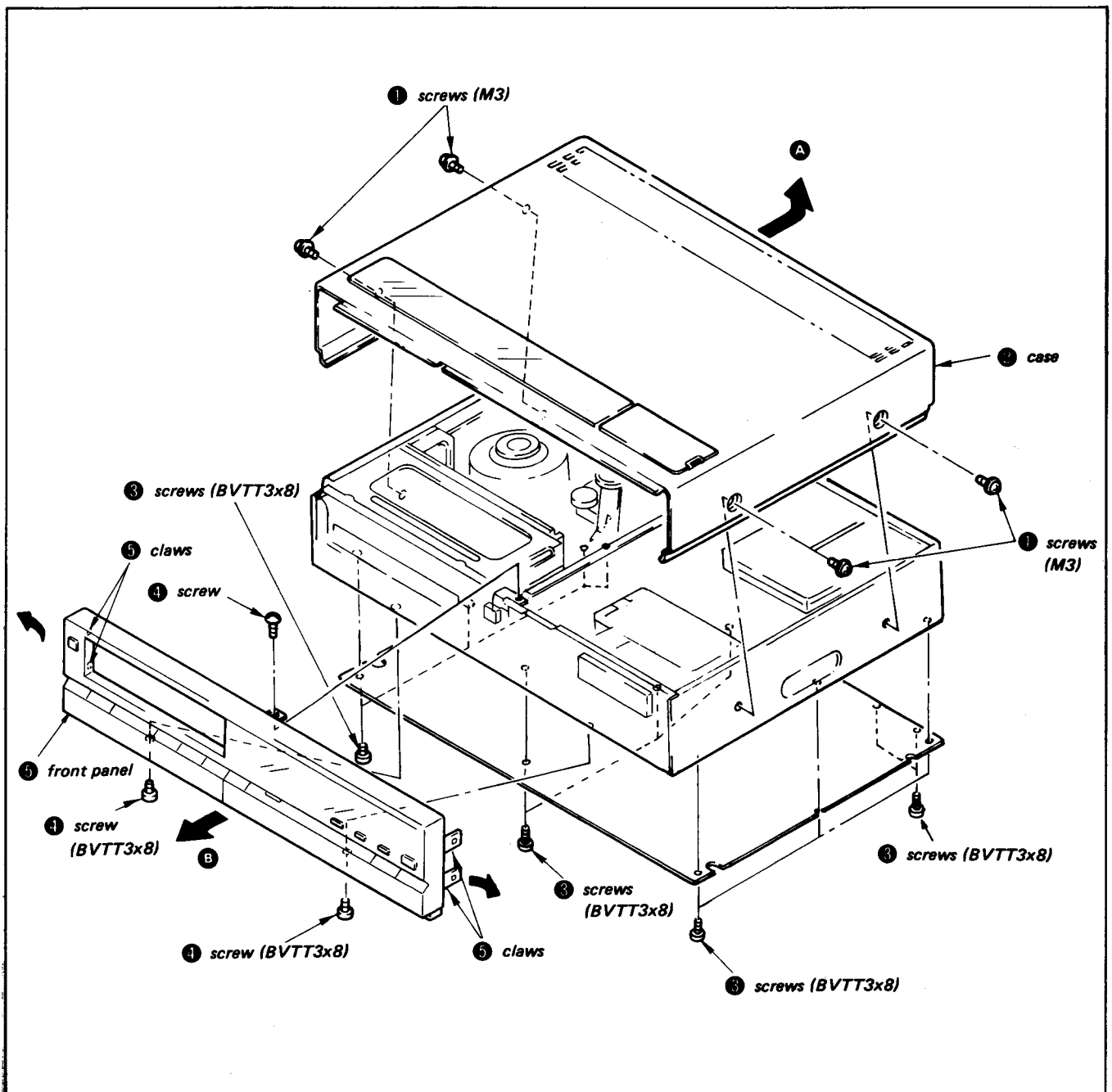


Fig. 1-1. Disassembly of Cabinet

## 1-2. REMOVAL OF THE TU-77 BOARD AND VI-11 BOARD

- ① Pull out the two plugs.
- ② Remove the two screws (BVTT3×8).
- ③ Remove the TU-77 board.
- ④ Remove the two screws (BVTT3×8).
- ⑤ Remove the VI-11 board.

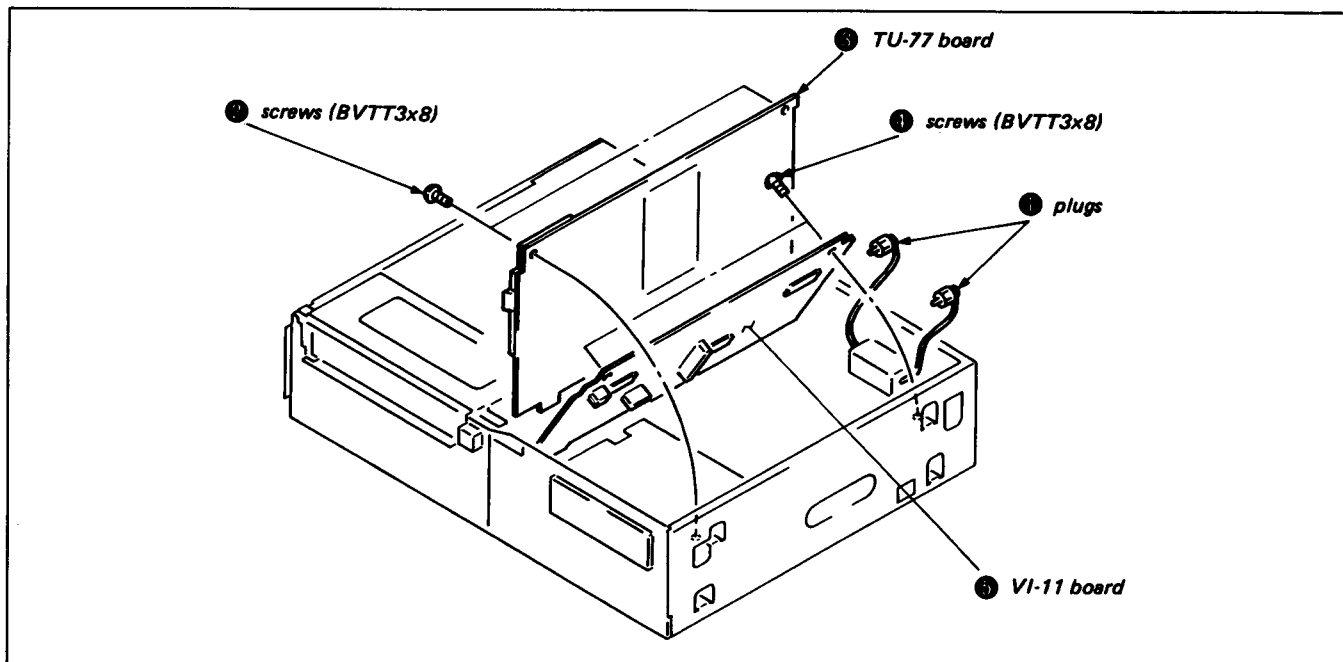


Fig. 1-2. Removal of the TU-77 Board and VI-11 Board

## 1-3. REMOVAL OF THE AU-8 BOARD AND MP-7 BOARD

- ① Remove the screw (BVTT3×8).
- ② Remove the rear panel.
- ③ Remove the two screws (BVTT3×8).
- ④ Remove the AU-8 board.
- ⑤ Remove the two screws (BVTT3×8).
- ⑥ Remove the MP-7 board.

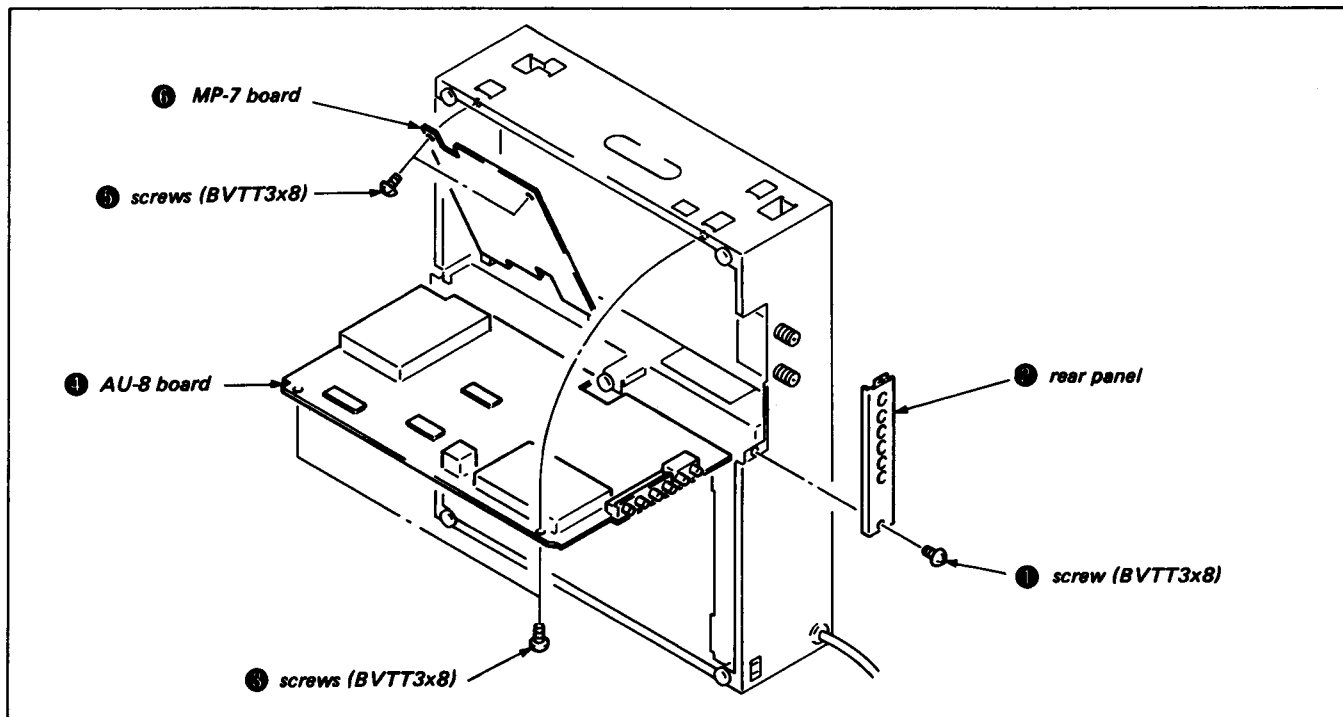


Fig. 1-3. Removal of the AU-8 Board and MP-7 Board



#### 1-4. REMOVAL OF THE SS-32 BOARD

- Remove the two screws (BVT3×8).
- Remove the SS-32 board.

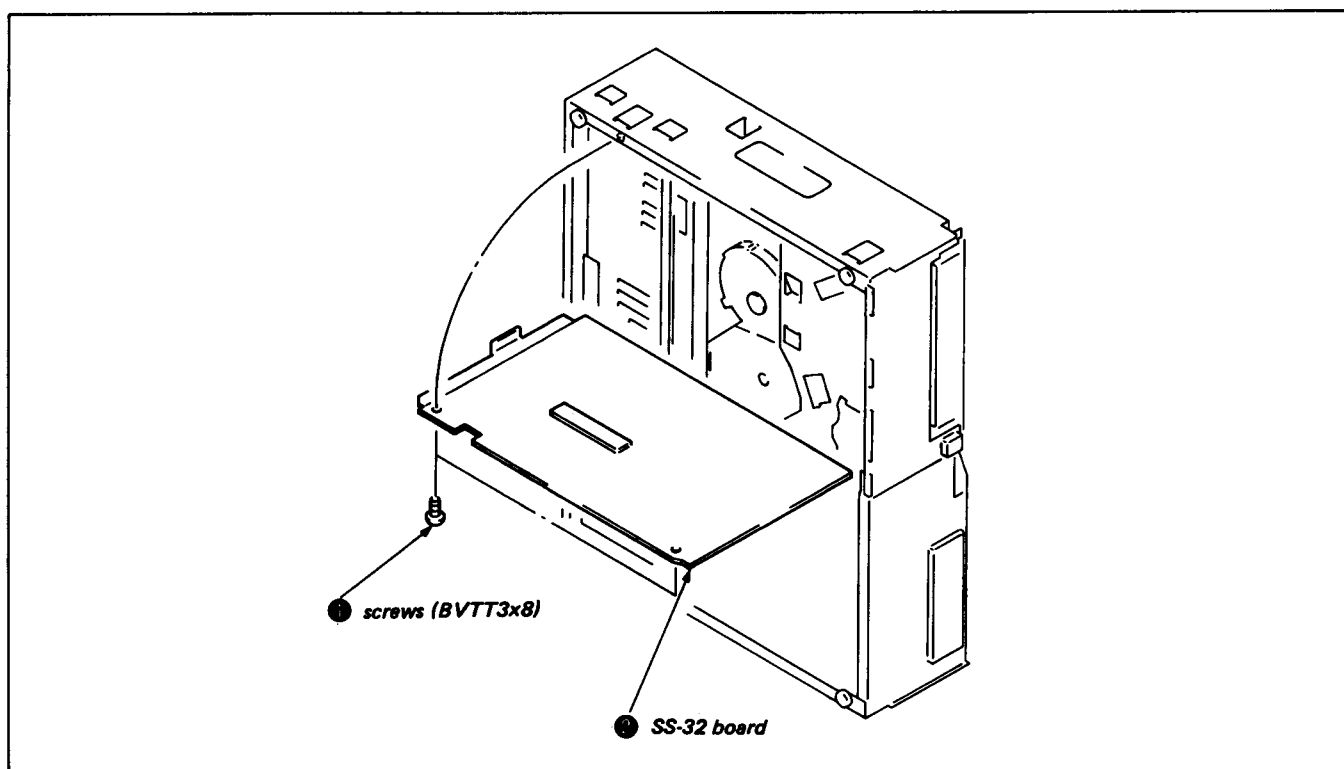


Fig. 1-4. Removal of the SS-32 Board

#### 1-5. REMOVAL OF THE TM-82 BOARD

- Pull out the five connectors.
- Pull out the connector CN305.
- Remove the two screws (BVT3×8).
- Remove the TM-82 board.

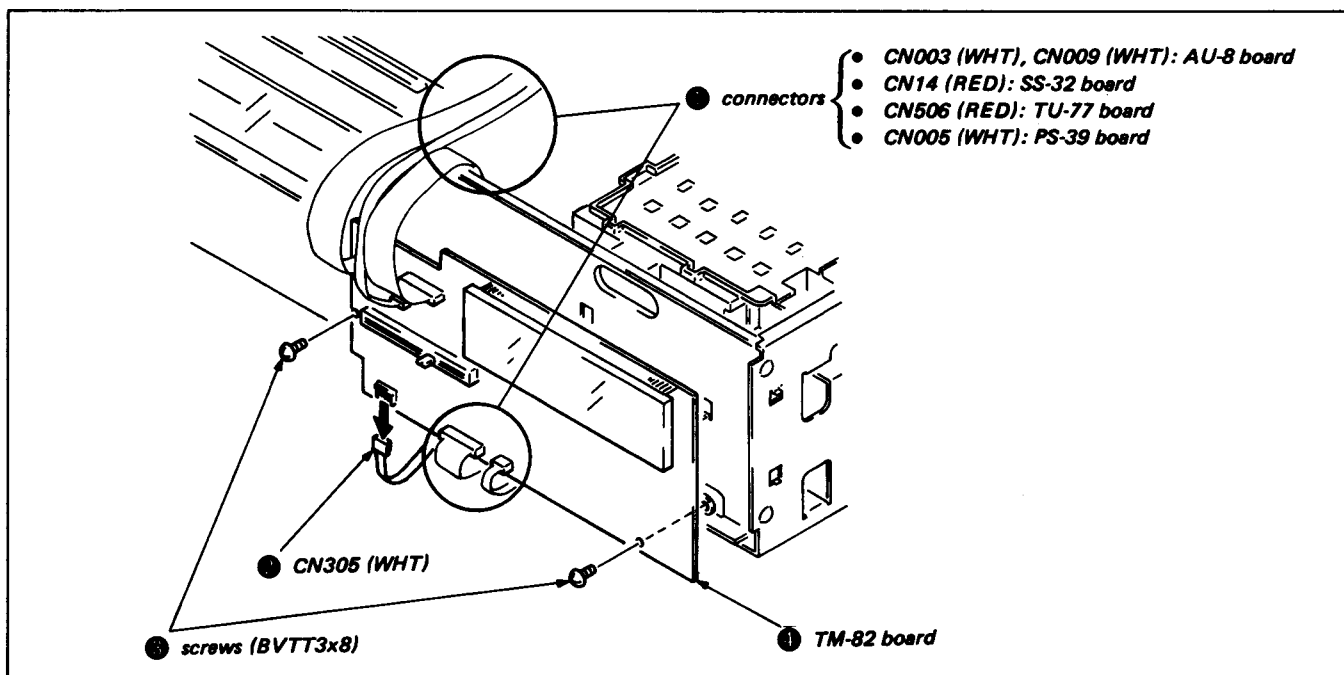


Fig. 1-5. Removal of the TM-82 Board

## 1-6. REMOVAL OF THE FU-38 BOARD

- ① Pull out the five connectors.
- ② Remove the two screws (BVTT3×8).
- ③ Remove the FU-38 board in the direction indicated by the arrow **A**.

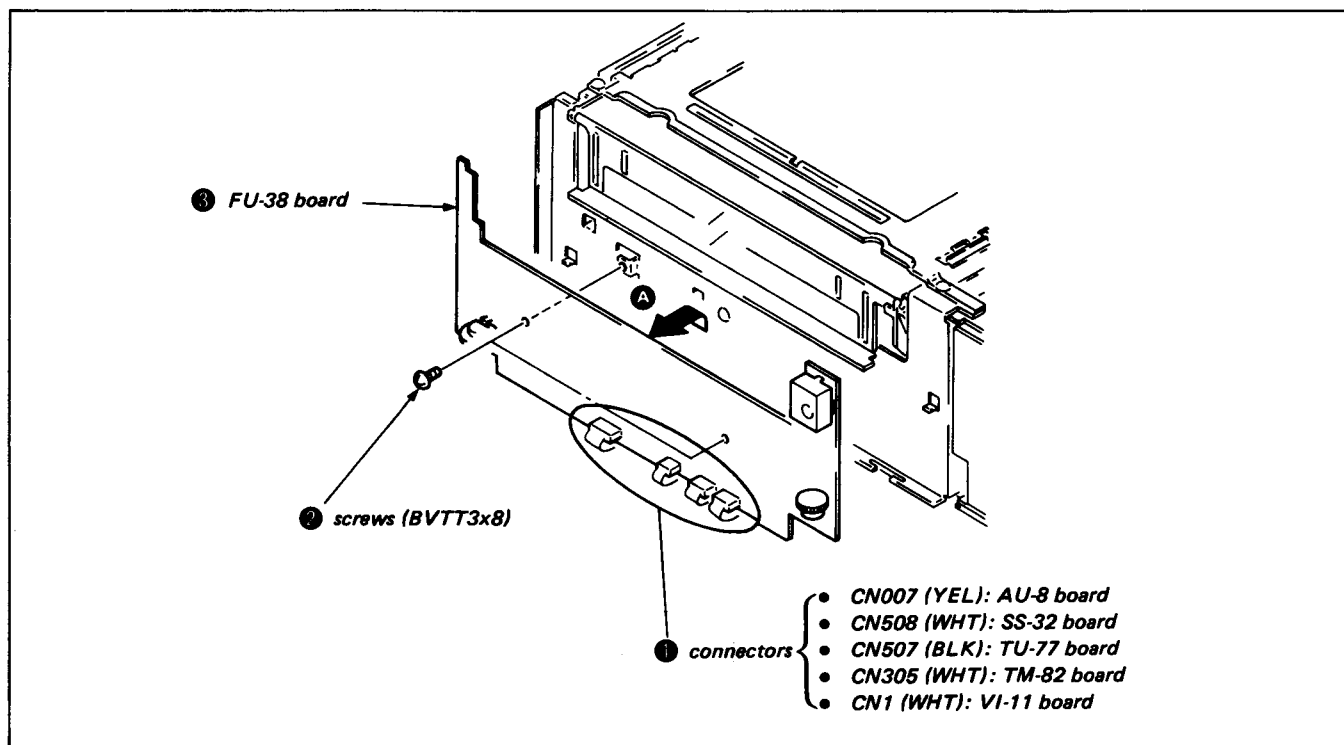


Fig. 1-6. Removal of the FU-38 Board

## 1-7. REMOVAL OF THE RP-28 BOARD

- ① Pull out the connector CN1.
- ② Remove the two screws (BVTT3×8).
- ③ Remove the two shield cases in the direction indicated by the arrows **A** and **B**.
- ④ Pull out the two connectors (CN3, CN5).

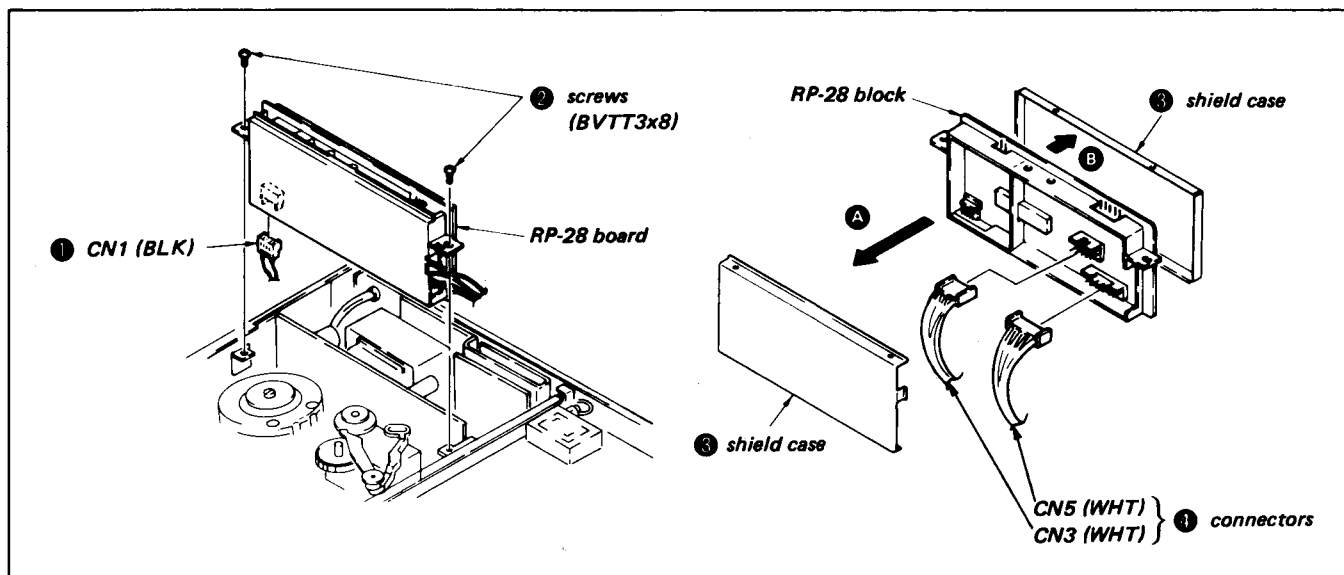


Fig. 1-7. Removal of the RP-28 Board

### 1-8. REMOVAL OF THE POWER BLOCK

- ① Remove the five connectors (CN1-CN5).
- ② Remove the screw (BVTT3 438) and lug terminal.
- ③ Remove the four screws (BVTT3×8).
- ④ Remove the POWER block in the direction indicated by the arrow **A**.

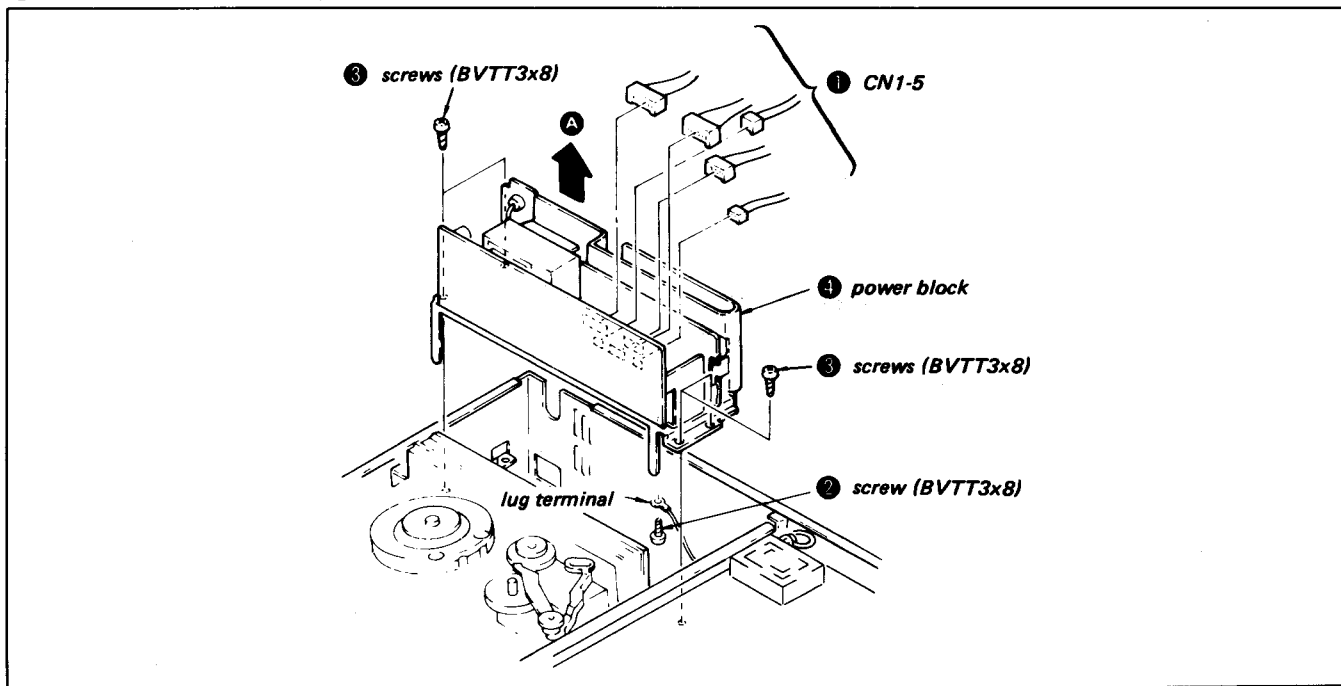


Fig. 1-8. Removal of the Power Block

### 1-9. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY

- ① Remove the four screws (BVTT3×8).
- ② Remove the internal gear flange.
- ③ Remove the timing belt.
- ④ Pull out the connector (CN12) from the SS-32 board.
- ⑤ FL cassette compartment assembly in the direction indicated by the arrow **A**.

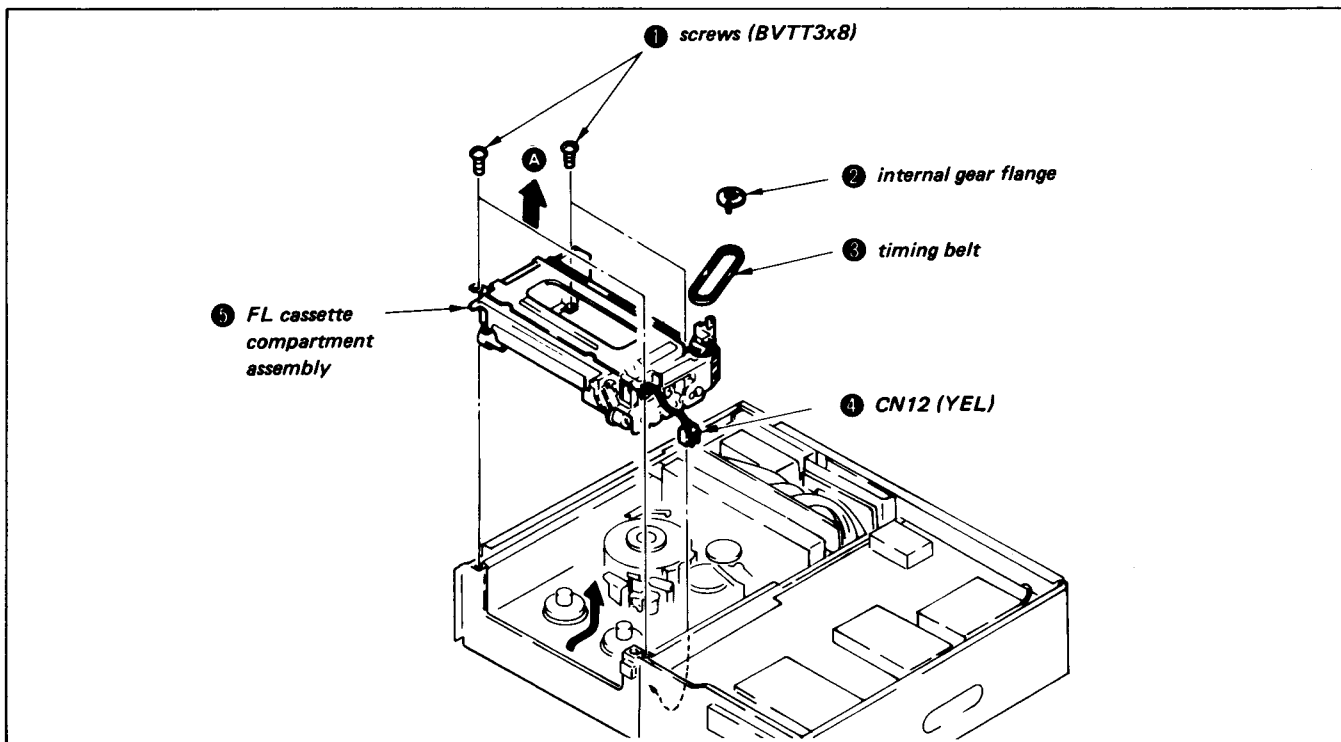


Fig. 1-9. Removal of the FL Cassette Compartment Assembly

## 1-10. REMOVAL OF THE REEL BASE BLOCK ASSEMBLY

- ① Remove the four screws (B3×14).
- ② Remove the reel base block assembly in the direction indicated by the arrow **A**.

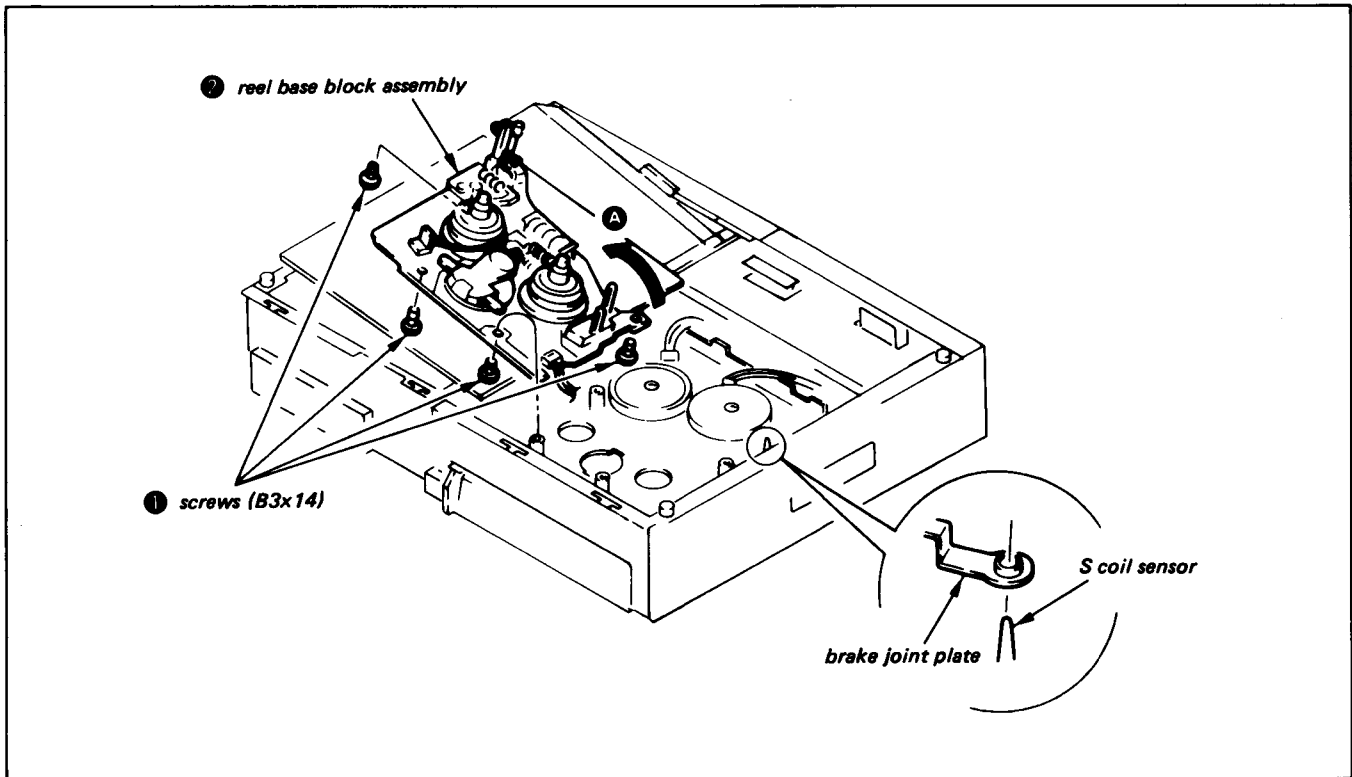


Fig. 1-10. Removal of the Reel Base Block Assembly

## 1-11. OPERATION OF THE UNIT WITH THE FL CASSETTE COMPARTMENT REMOVED

### 1-11-1. How to Put the Unit into Threading Completed Mode when the FL Cassette Compartment is Removed

- 1 Connect ordinary screwdriver to short the leaf switch (cassette-on switch).

**Note:**

Be careful that the ordinary screwdriver do not touch any other parts (use tape or other insulation).

- 2 Press the cassette-down switch and leave it pressed in. When the power button is turned ON, threading starts.

\* Refer to section 3-6 for instructions on how to remove the FL cassette compartment.

#### [How to EJECT in this condition]

- Press the EJECT button. When unthreading is completed and the internal gear starts to turn, turn the power OFF.

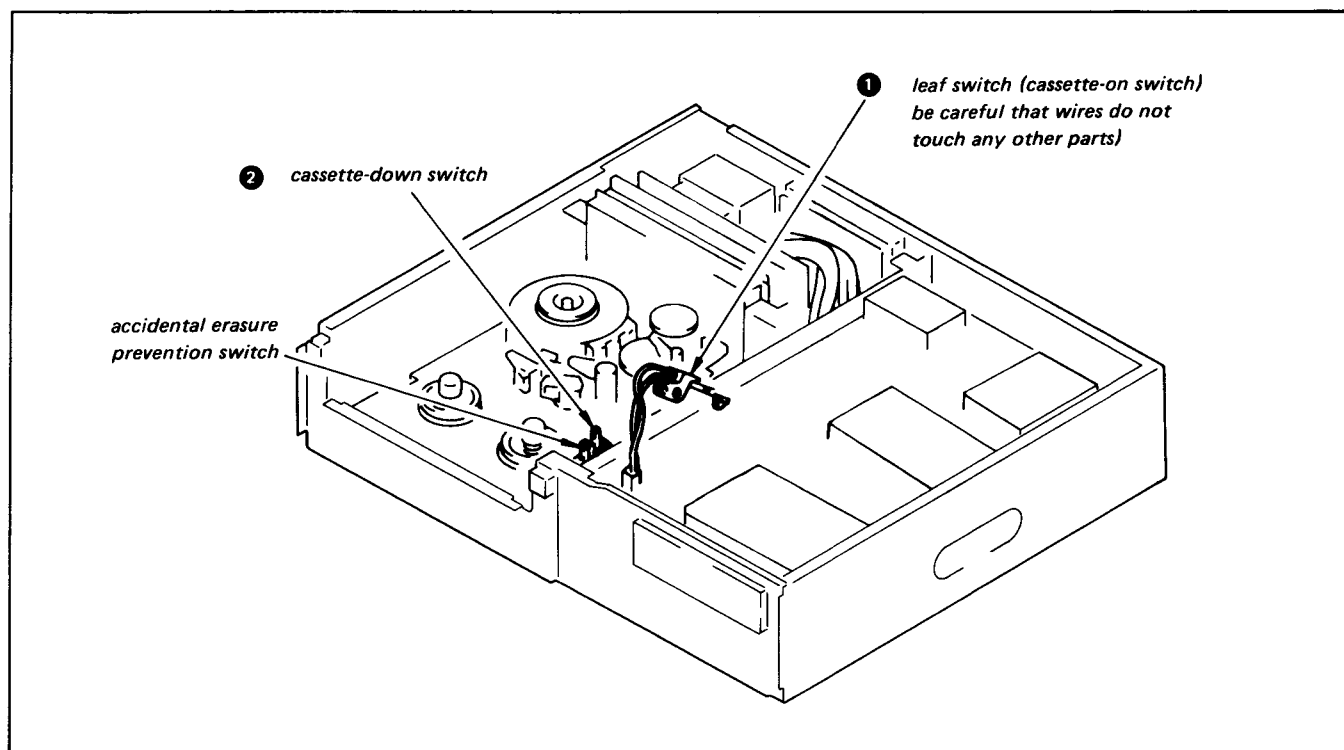


Fig. 1-11. How to thread the tape when the FL cassette compartment has been removed

### 1-11-2. Playback Without Cassette Installed

Complete threading by the procedure described in 1-11-1, then press the playback button.

### 1-11-3. How to Put in Recording Mode Without Cassette Installed

1. Thread by the procedure in 1-11-1, then press the accidental erasure prevention switch shown in Fig. 1-12.
2. With the accidental erasure prevention switch pressed down, press the recording button.

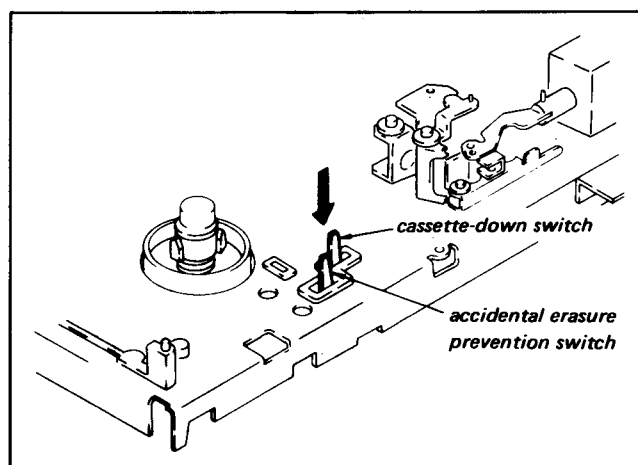


Fig. 1-12. How to put the recorder in recording mode with the FL cassette compartment removed

## 1-12. HOW TO LOAD, THREAD, UNLOAD AND UNTHREAD WITH THE POWER OFF

### 1-12-1. Manual Loading and Unloading

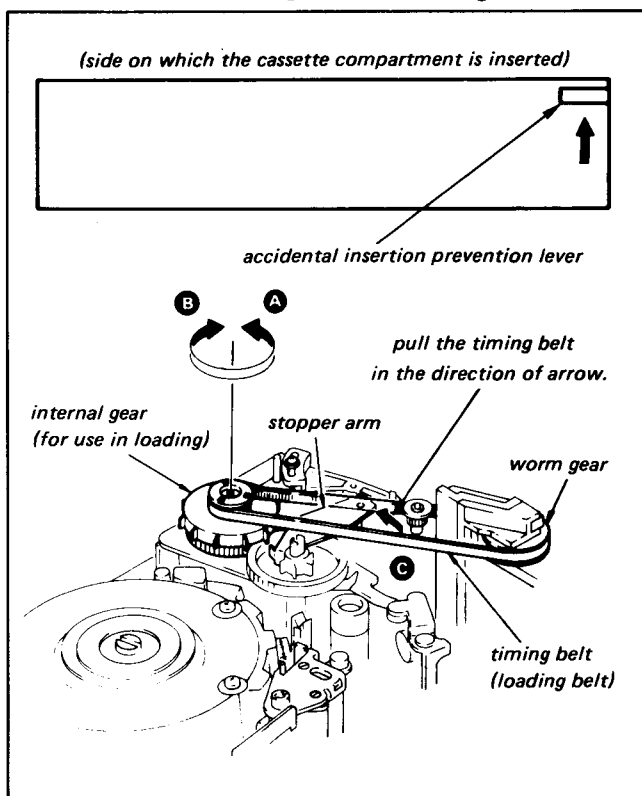


Fig. 1-13. Manual loading and unloading

- 1) Release the right accidental insertion prevention lever inside the cassette compartment, then press the stopper arm in the direction of arrow **C** and release the internal gear stop.
- 2) Turn the internal gear manually in the direction of arrow **A** until loading is completed.
- 3) To unload, turn the internal gear in the direction of arrow **B**.

#### Note:

When the loading belt has been removed, load and unload by turning the worm gear manually.

### 1-12-2. Manual Threading and Unthreading

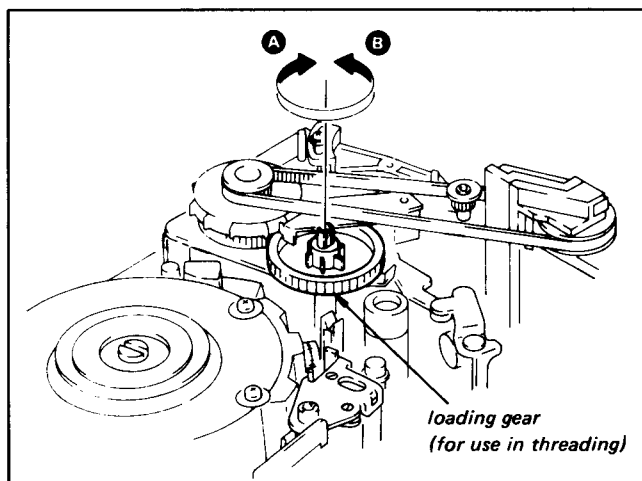


Fig. 1-14. Manual threading and unthreading

- 1) Turn the loading gear in the direction of arrow **A** until loading is completed.
- 2) To unthread, turn the loading gear in the direction of arrow **B**.

#### Note:

Always turn the loading gear sideways by hand.  
Never use a screwdriver or other tool.

### 1-13. TOOLS AND FIXTURES REQUIRED FOR SERVICING

| Ref.No. | Name                                             | Part Code                    | Carved Jig No. | Use and Remarks                                                        |
|---------|--------------------------------------------------|------------------------------|----------------|------------------------------------------------------------------------|
| J-1     | Torque Measurement Tape                          | J-6080-003-C                 | SL-0003C       | forward torque and back tension measurement                            |
| J-2     | Parallel Plate                                   | J-6086-750-A                 | SL-0657        | audio/CTL head lateral adjustment<br>capstan shaft vertical adjustment |
| J-3     | Dental Mirror (handle)<br>Dental Mirror (mirror) | J-6080-029-A<br>J 6080 030 1 | SL-5052        | tape path and tape traveling adjustment check                          |
| J-4     | Alignment Tape (KR5-1V)                          | 8-969-995-92                 | —              | tracking, overall adjustment of picture quality, etc.                  |
| J-5     | Cleaning Fluid                                   | Y-2031-001-0                 | —              |                                                                        |
| J-6     | Thickness Gauge                                  | 9-911-053-00                 |                |                                                                        |
| J-7     | Chamois Cloth                                    | 2-034-697-00                 | —              | cleaning                                                               |
| J-8     | Head Demagnetizer                                | widely available             | —              | demagnetization of video head and audio head                           |
| J-9     | Cleaning Cassette Tape                           | 8-888-004-00                 | —              | video head cleaning                                                    |
| J-10    | Dihedral Adjustment Screw                        | J 6080 013 1                 | SL-0013        | video dihedral adjustment                                              |
| J-11    | Video Head Checker                               | 7-732-080-01                 | SL-5151        | state of wear of video heads check                                     |

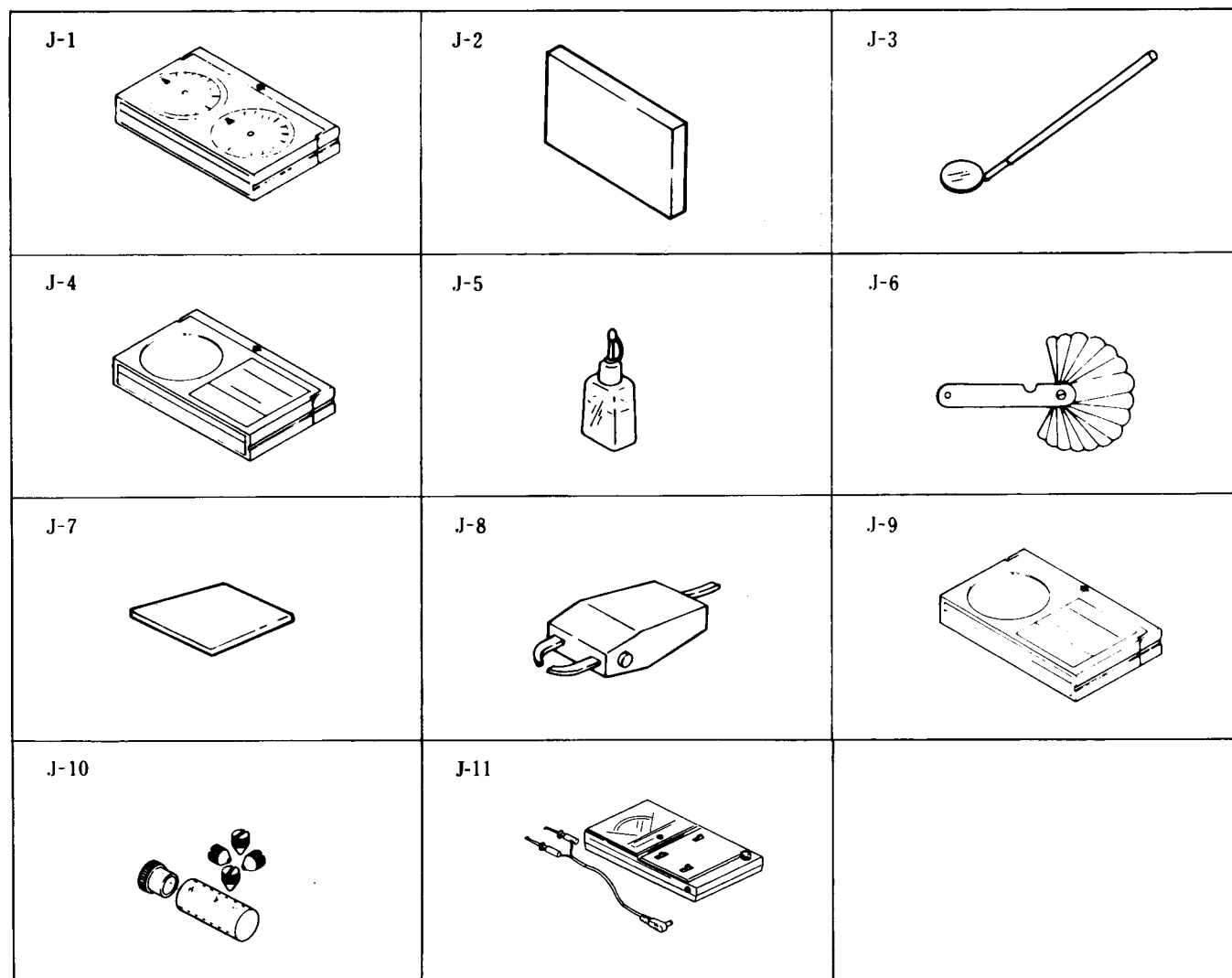


Fig. 1-15. Tools and fixtures required for servicing

## 2. PERIODIC CHECK AND MAINTENANCE

In order to obtain the best performance from this unit and make full use of its capabilities, and to extend the life of the unit and tapes, it is recommended that the following periodic checks and maintenance be performed.

### 2-1. POST-REPAIR MAINTENANCE

The following must be done after every repair regardless of how many hours the user has operated the machine.

#### 2-1-1. Cleaning of Rotating Head Disk Assembly

- 1) Press a chamois cloth (Jig Ref. No. J-7) which has been dipped in cleaning fluid (Jig Ref. No. J-5) lightly against the rotating drum assembly, then do the cleaning by slowly rotating the rotating head disk by hand. (Never try to clean by using the motor to turn it.)
- 2) Never try to clean by moving the chamois cloth at a right angle to the head tip. There is a very great danger of damaging the head tip if this is done.

#### 2-1-2. Cleaning of the Tape Movement System

- 1) Clean the surfaces which the tape contacts during its movement (tape guide, drum assembly surface, capstan, pinch roller, etc.) with a chamois cloth that has been dipped in cleaning fluid.

#### 2-1-3. Cleaning the Drive System

- 1) Clean the driving parts with a cloth that has been dipped in cleaning fluid.

#### parts requiring cleaning

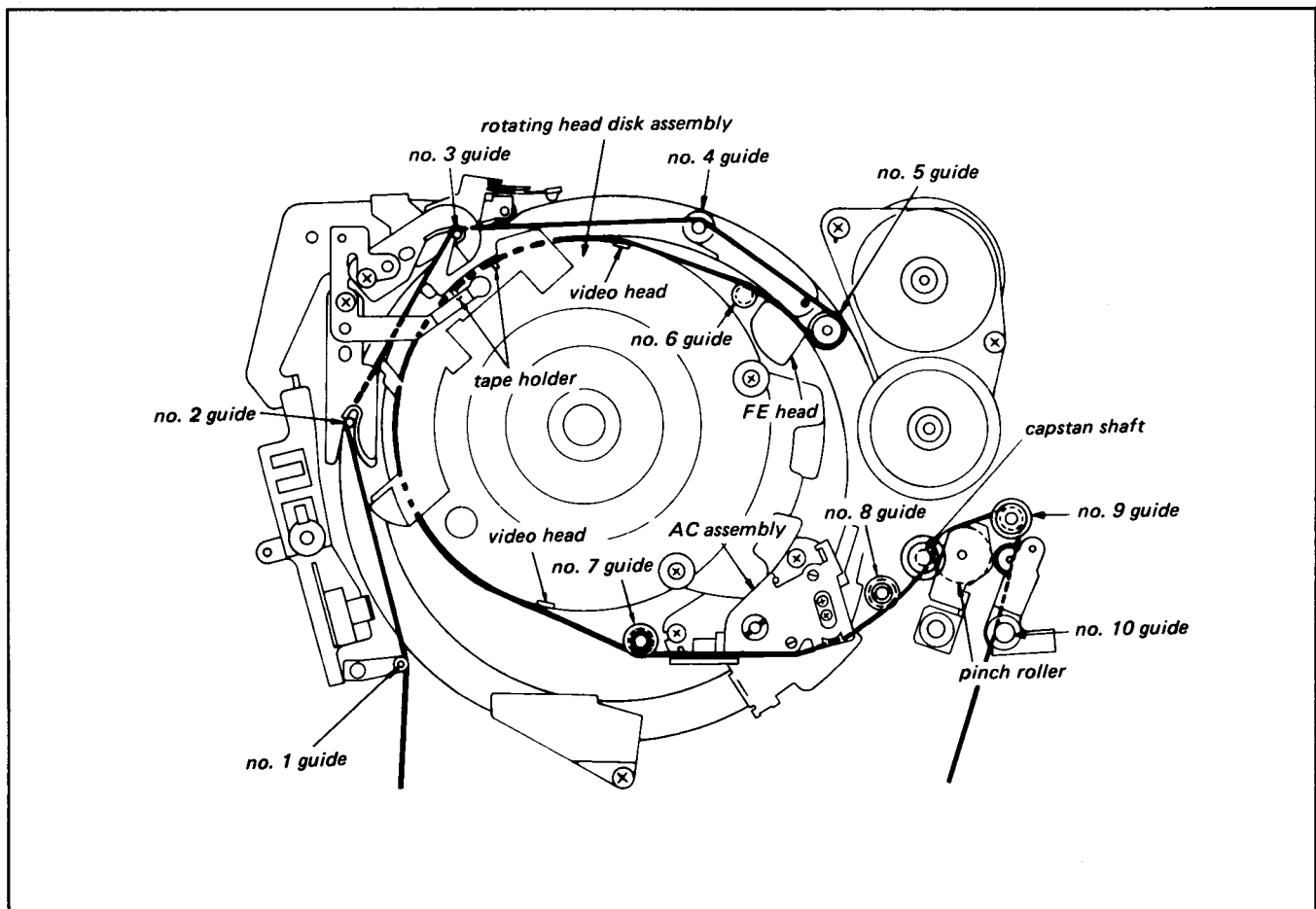


Fig. 2-1. Parts requiring cleaning



## 2-2. PERIODIC CHECK ITEMS

Perform the maintenance and check listed on the table below.  
according to user's operating hours.

| Maintenance & Check             |                                               | Operating Hours (H)  | 500 | 1,000 | 1,500 | 2,000 | 2,500 | 3,000 | 3,500 | 4,000 | 4,500 | 5,000 | Remarks                                                                                                                                   |
|---------------------------------|-----------------------------------------------|----------------------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------------------|
|                                 |                                               | Replacement Part No. |     |       |       |       |       |       |       |       |       |       |                                                                                                                                           |
| Tape Trans-<br>portation System | Cleaning of tape transportation system        | —                    | ○   | ○     | ○     | ○     | ○     | ○     | ○     | ○     | ○     | ○     | This cleaning must be done whenever a repair is made.                                                                                     |
|                                 | Cleaning and degaussing of AC ass'y           | —                    | ○   | ○     | ○     | ○     | ○     | ○     | ○     | ○     | ○     | ○     |                                                                                                                                           |
|                                 | Cleaning & degaussing of video disk ass'y     | —                    | ○   | ○     | ○     | ○     | ○     | ○     | ○     | ○     | ○     | ○     | The life of the head varies, depending on operational conditions and method.                                                              |
| Driving System                  | Loading belt (synchro belt)                   | 3-684-264-00         | ☆   | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | This cleaning must be done whenever a repair is made.                                                                                     |
|                                 | Cleaning of iron core and opening of solenoid | —                    | —   | —     | —     | ○     | —     | —     | —     | ○     | —     | —     | Wipe iron core and opening of solenoid with dry cloth.                                                                                    |
| Performance Confirmation        | Abnormal sound                                |                      | ☆   | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | Adjust or replace the section which causes abnormal sound.                                                                                |
|                                 | Measurement of FWD back tension               |                      | —   | ☆     | —     | ☆     | —     | ☆     | —     | ☆     | —     | ☆     | Confirmation must be made according to section Specified value:<br>adjust to $44 \pm 4$ g·cm<br>(When measured with torque cassette tape) |
|                                 | Confirmation of brake system                  |                      | —   | ☆     | —     | ☆     | —     | ☆     | —     | ☆     | —     | ☆     | Confirmation must be made according to section                                                                                            |
|                                 | Confirmation of record & playback functions   |                      | ☆   | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | Perform the confirmation whenever repair is made.                                                                                         |
|                                 | Measurement of forward torque                 |                      | ☆   | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | ☆     | Adjust to 45~90 g·cm (SL-0003C)                                                                                                           |

○ Cleaning ☆ Replacement ☆ Confirmation

### Note:

On overhaul

When overhauling the unit, replace parts as indicated in the above table.

### 3. CHECK, ADJUSTMENT, AND REPLACEMENT PROCEDURES

#### 3-1. STATE OF WEAR OF VIDEO HEADS CHECK

As the accuracy of the check depends on the state of the heads and precision of the checker, the results should be taken only as an indication of the state of wear.

##### [Adjustment of video head checker]

- 1) Mechanical zero  
Verify that the pointer of the video head checker is at the mechanical zero position. If it is not at this position, adjust the mechanical zero control.
- 2) Battery voltage check  
Set the MODE switch to "BATT" and set the POWER switch to "ON". The deflection of the pointer should be within the range marked "BATT". If not, replace the battery (use a 6F22 battery) as follows.
- 3) Calibration check  
Set the POWER switch to "ON" and the MODE switch to "CAL", then adjust the CAL control so that the pointer is on the CAL mark.

**Note 1:** Be sure to carry out this adjustment whenever the RANGE switch is changed.

**Note 2:** Be sure to check CAL before measuring the head and proceed the measurement after adjusting CAL, if CAL is not properly set.

##### [Method of measurement]

- 1) Remove the two screws that hold the damper assembly in place, then remove the damper assembly.
- 2) Detach the lead wires on the 2 video heads.
- 3) Attach the measuring clips to the head leads. Be sure to separate the leads by at least 1.5 cm.
- 4) Set RANGE switch to "B" and MODE switch to "MEAS". The pointer will deflect to indicate the state of wear of the heads.

**Note:** The deflection for the 2 video heads may be different, so be sure to measure both.

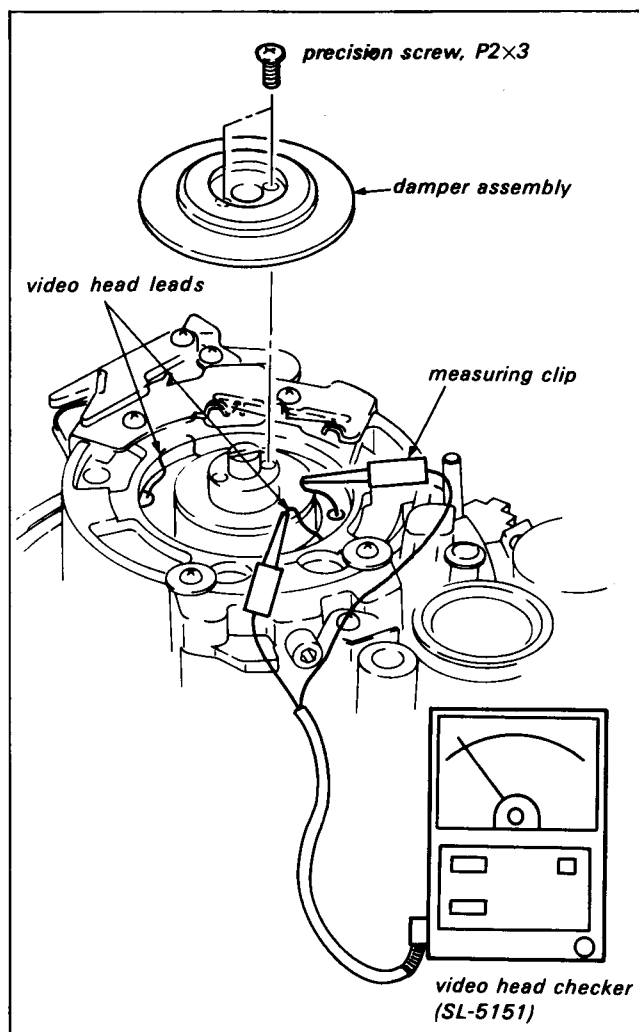


Fig. 3-1.

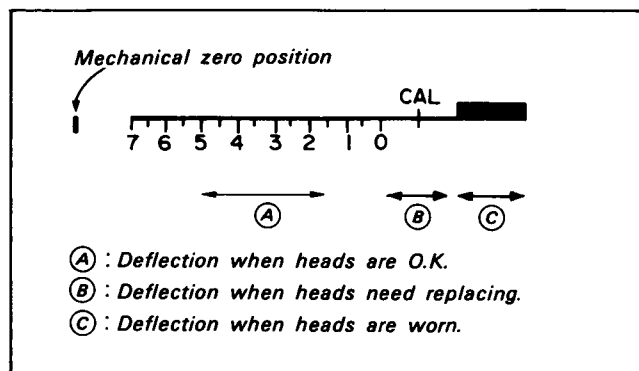


Fig. 3-2. Measured value

### 3-2. REPLACEMENT OF ROTATING HEAD DISK ASSEMBLY

#### 3-2-1. Removal of the Rotating Head Disk Assembly (Fig. 3-3)

- ① Remove the two screws that hold the damper assembly in place, then remove the damper assembly.
- ② Use a hexagonal wrench to remove the hexagonal socket bolt that holds the upper drum assembly in place, then remove the upper drum assembly.

**Note:**

Turn the upper drum to remove, being careful not to move the adjusting plate. Movement of the adjusting plate will have a great effect on the tape path, so caution is required.

- ③ Unsolder the rotating head disk relay plate (4 red and white leads).
- ④ Remove the two hexagonal socket bolts holding rotating head disk assembly ⑤ in place, then remove the rotating head disk assembly.

**Note:**

Be careful not to touch the head tip with the hand or bang anything against it.

#### 3-2-2. Mounting of the Rotating Head Disk Assembly (Fig. 3-3)

- 1) Insert rotating head disk ⑤ in place, being careful of the direction so that the red and white leads are in the right places.
- 2) Tighten hexagonal socket bolt ④ and solder the lead wires.

**Note:**

Be careful to solder the lead wires correctly and not to break any wires.

- 3) Attach the upper drum, being careful (as during removal) not to move the adjusting plate. While pressing the two points that determine the height, tighten hexagonal socket bolt ②.

**Note:**

When inserting the upper drum, be careful that it does not touch the head tip.

**Note:**

When replacing the rotating drum head, it can happen that the rotating head disk assembly will be hard to remove. In such a case, remove it using the method explained below (Fig. 3-4)

- ① Remove the hexagonal socket bolts that hold the rotating head disk assembly in place.
- ② When the head disk is jammed on tight and is hard to remove, screw the hexagonal socket bolts removed in step ① into the threaded holes removed from the original holes by 90°. Tighten them a little at a time.

The head disk will be lifted up by the two screws and will come off easily.

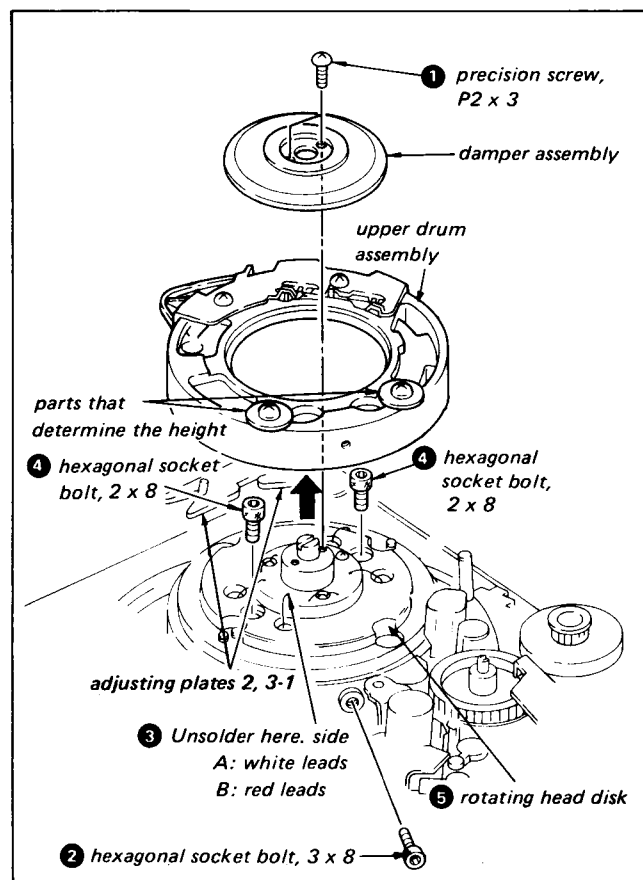


Fig. 3-3. Removal of the rotating head disk assembly I

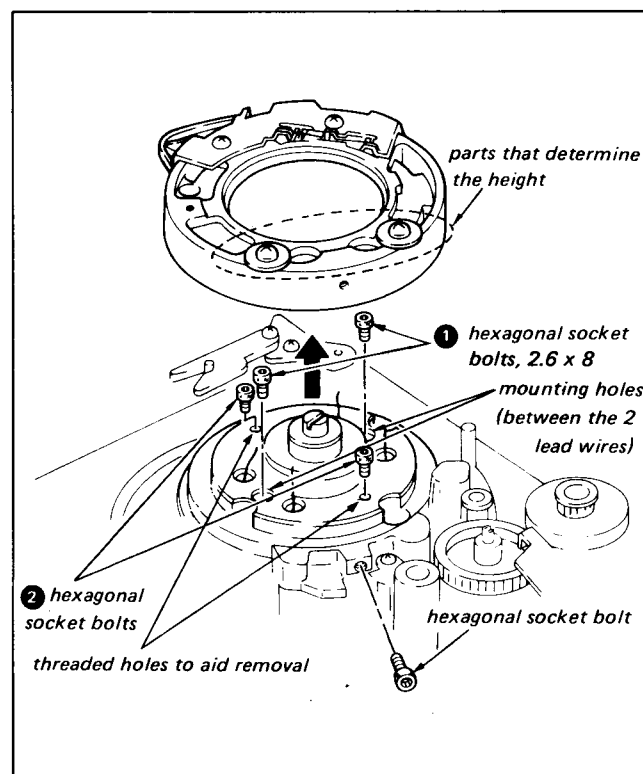


Fig. 3-4. Removal of the rotating head disk assembly II

### 3-3. VIDEO HEAD DIHEDRAL CHECK AND ADJUSTMENT

This adjustment is generally unnecessary, but it is sometimes necessary when the video head disk is replaced. (The video head disk used for maintenance has been precision adjusted at the factory using a microscope and almost never needs to be readjusted.)

When judging whether the video head dihedral angle is correct, the alignment tape is played back. When this is done the tracking control knob must be in the centering position. If the check is done with this knob in other than the center click position (if the tracking is off-center), even if the dihedral angle is correct the picture will be reproduced as if it were off.

Before this adjustment is performed, the AC assembly position adjustment (refer to the section where the tape path adjustment is described) must be completed.

#### [Method of checking]

With the tracking control knob set to the center click position, play back the  $\beta$ II monoscope section of the alignment tape. Check to see if any of the vertical monoscope lines immediately below the switching pulse are reproduced double. If not, the dihedral angle is correct and does not have to be adjusted. If so, perform the adjustment as explained below.

#### [Method of adjustment]

- 1) As shown in Fig. 3-5, screw two dihedral angle adjustment screws (Jig Ref. No. J-10) into the adjustment screw holes on the side on which the red lead wires from the video head are connected, until the top of the screw is level with the video head disk. (If they are not screwed in far enough, the video head disk will not turn past the point where the top of the adjustment screw strikes the upper drum. Conversely, if it is screwed in too far, the head base will be moved, throwing the video head dihedral angle way off.)

#### Note:

**The side on which the white lead wires are connected is the reference side and must not be moved.**

- 2) Screw one of the two adjustment screws in a little bit farther until resistance is felt. Beyond this point, turning the screw still farther will move the video head, adjusting the dihedral angle.
- 3) With the adjustment screws in place, play the  $\beta$ II monoscope signal section of the alignment tape and see how the lines are reproduced. If the vertical lines are split apart more than before, turn the screw which was screwed in more tightly counterclockwise to loosen it, then adjust by tightening the other screw.
- 4) After the adjustment is completed, remove the adjustment screws and play the tape again to reconfirm that the adjustment is correct.

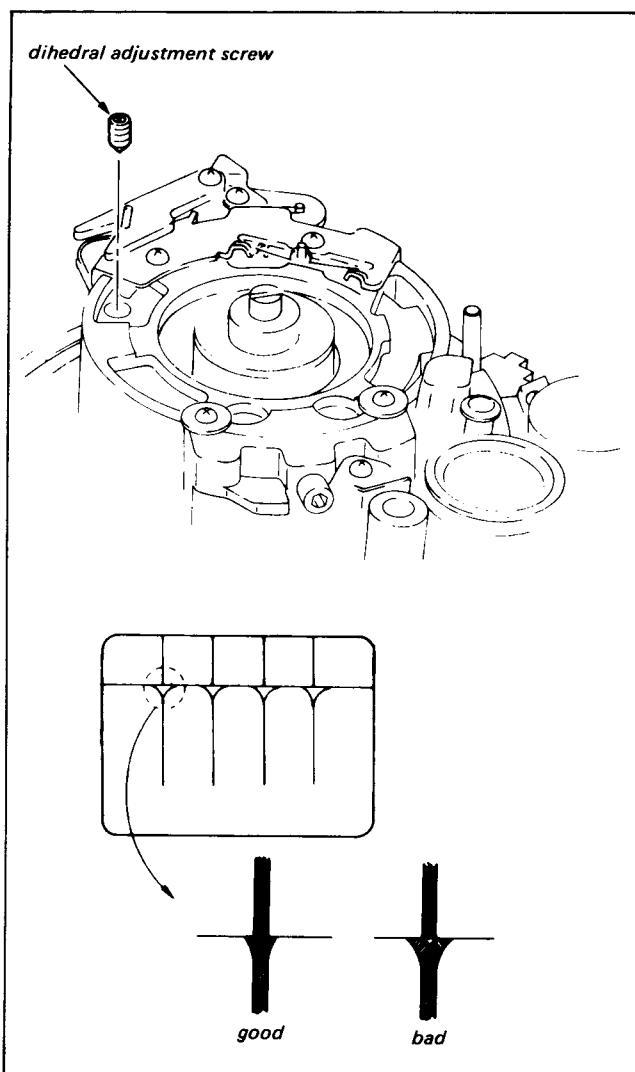


Fig. 3-5. Video head dihedral adjustment

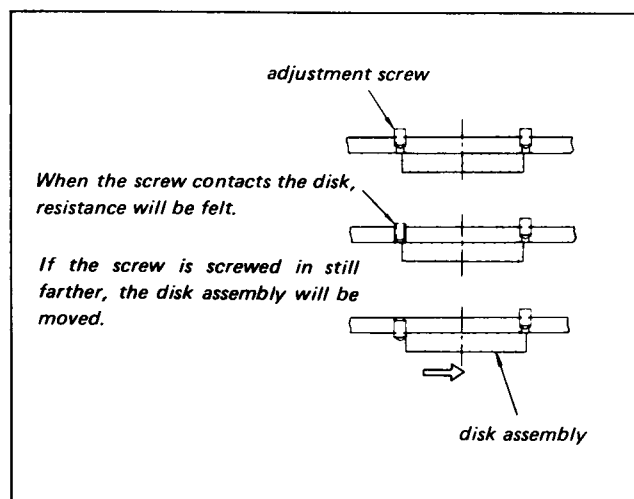


Fig. 3-6.

### 3-4. REPLACEMENT AND ADJUSTMENT OF THE DRUM ASSEMBLY

#### 3-4-1. Replacement of the Drum Assembly

- ① Measure gap **A** between adjusting plate 2 and the upper drum holder section, and record the measurement.

**Note:**

The position where the adjusting plate is mounted has a large effect on the tape path, so this measurement must be performed.

- ② Measure gap **B** between adjusting plate 3-1 and the upper drum holder section, and record the measurement.

**Note:**

The position where the adjusting plate is mounted has a large effect on the tape path, so this measurement must be performed.

- ③ Remove the screws shown in Fig. 3-7, then remove the tape guide ground plate and adjusting plates 1 and 2.
- ④ Remove the 3 connectors from the rear of the chassis as shown in Fig. 3-8.
- ⑤ Remove the 3 drum mounting screws from the rear of the chassis, then remove the main body of the drum assembly. After the replacement has been completed, adjust the drum path.

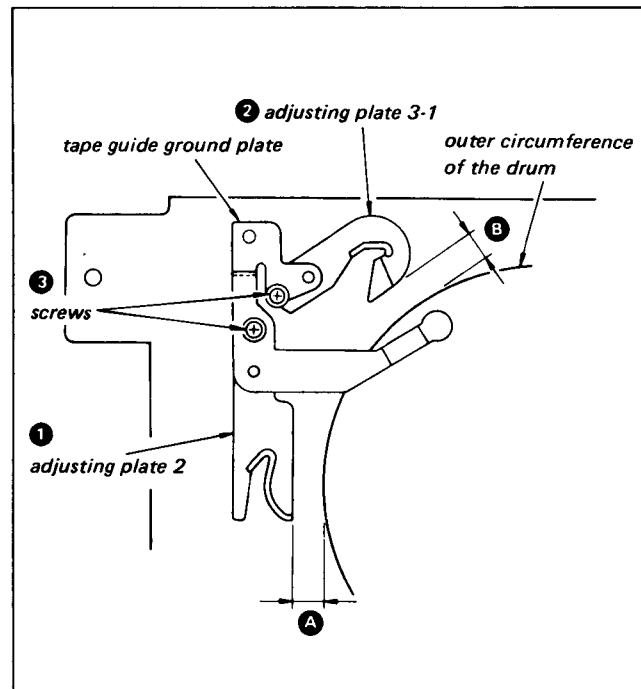


Fig. 3-7. Measurement of the position of adjusting plates 2 and 3-1

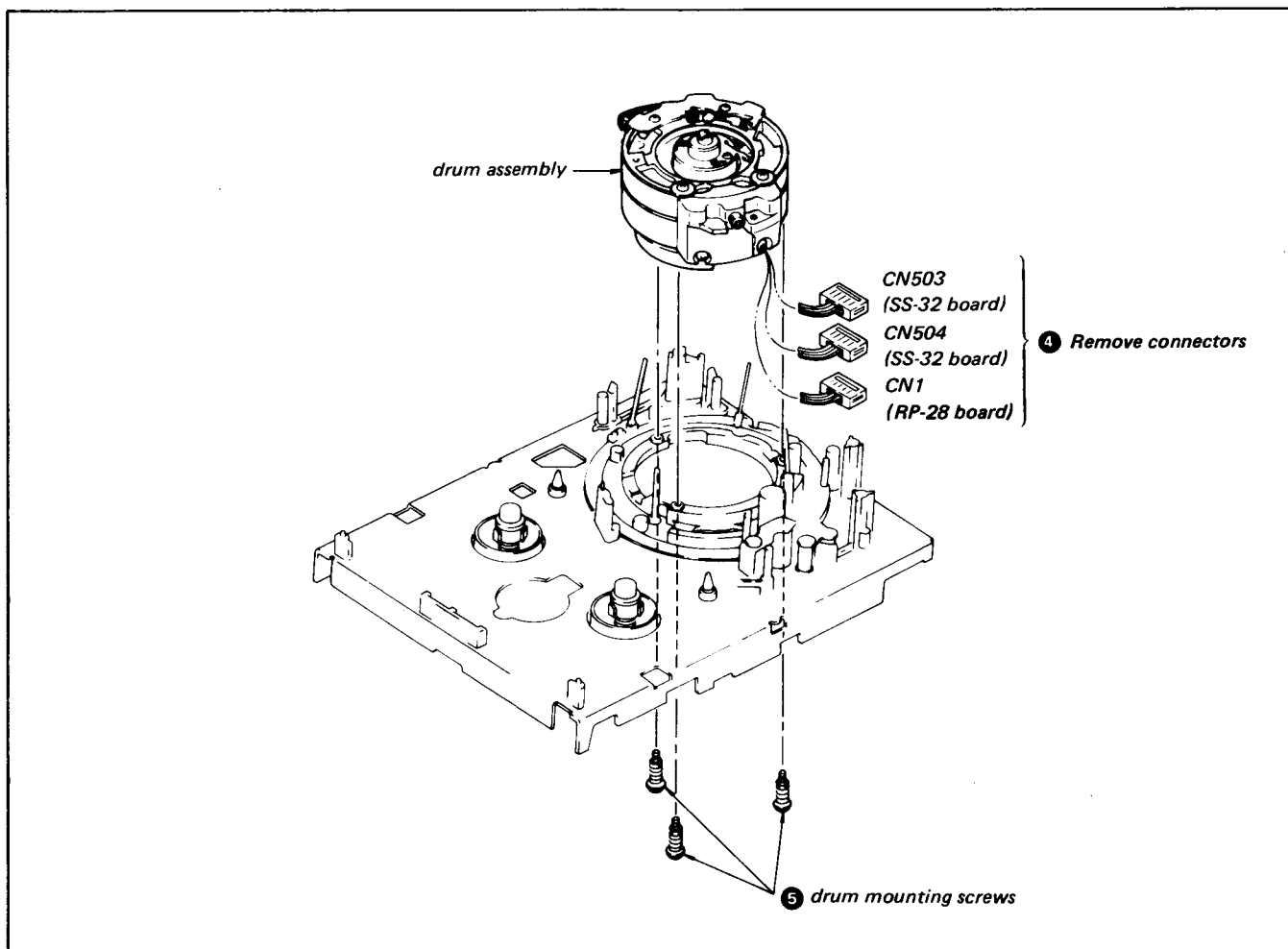


Fig. 3-8. Removal of the drum assembly

### 3-4-2. Adjustment of the Motor Gap when Replacing the Drum Assembly

After replacing the drum assembly, adjust the gap between the motor rotor and the coil to 0.3 mm to 0.6 mm (Fig. 3-9).

#### [Procedure]

- 1) When re-assembling the drum, use the spacers which were removed to produce a gap of between 0.3 mm and 0.6 mm. Measure the gap using the gauge that comes with the drum for assembly and maintenance use. One side of the gauge is 0.3 mm and the other side is 0.6 mm. If the gap is adjusted correctly, the 0.3 mm side should fit in and the 0.6 mm side should not.
- 2) If this fails to give the correct gap width, do not use the spacers which were removed; instead, use a combination of the 4 0.3 mm accessory spacers to obtain the correct width.

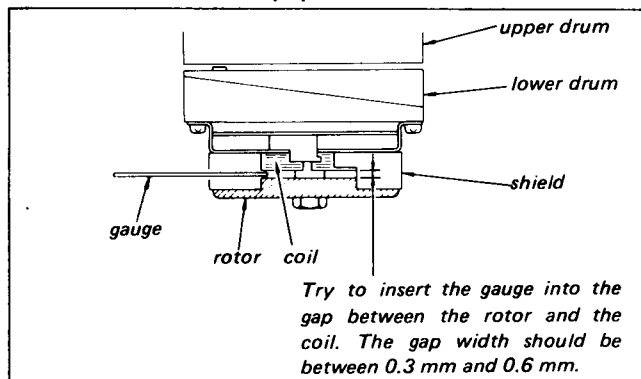


Fig. 3-9. Checking the motor gap width after replacing the drum assembly

### Removal of the stator and rotor when replacing the drum

- ① Remove the nut and washer.
- ② Remove the rotor from the stator.
- ③ Remove the 2 screws, then remove the stator from the main body of the drum.

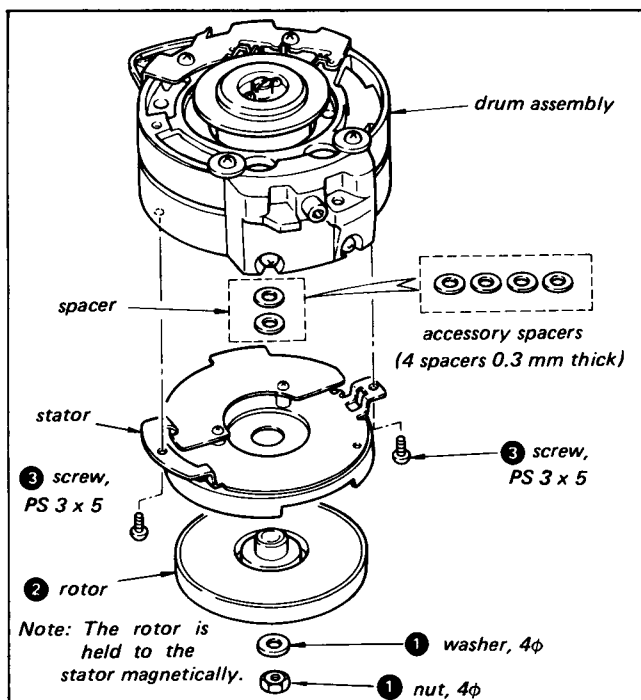


Fig. 3-10. Removal of the stator and rotor when replacing the drum

### 3-5. REPLACEMENT OF THE CAPSTAN MOTOR

#### 3-5-1. Removal of the Capstan Motor (Fig. 3-11)

- Remove screw ①, then remove the capstan motor from the rear of the mechanical chassis.

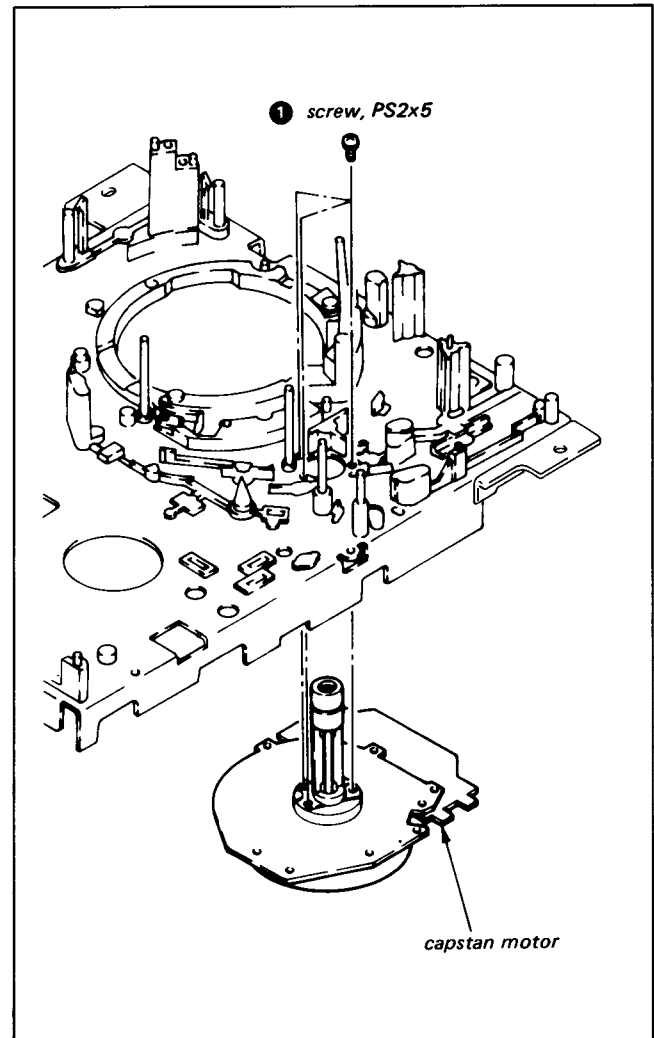


Fig. 3-11. Removal of the capstan motor

### 3-6. REMOVAL OF THE S COIL SENSOR (Fig. 3-12)

- ① Remove the spring.
- ② Remove the claw in the direction of arrow **A**, then pull the S coil sensor out.
- ③ Unplug the connector from CN2 on SS-32 board.

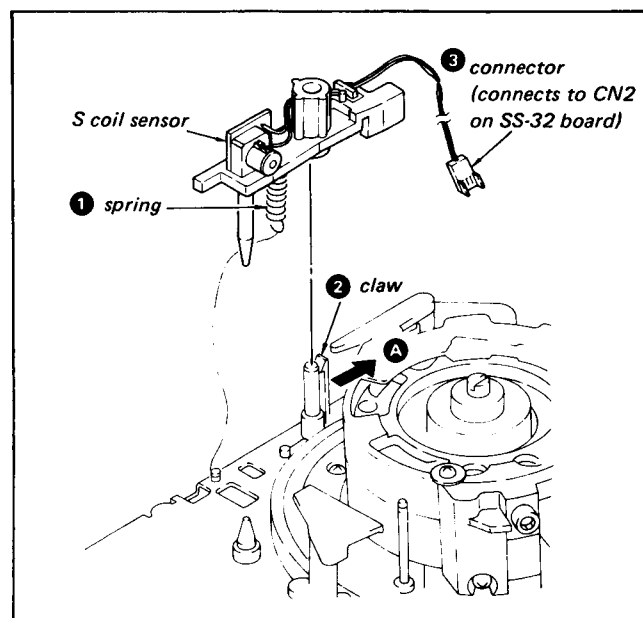


Fig. 3-12. Removal of the S coil sensor

### 3-7. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY (Fig. 3-13)

- ① Remove the four screws (BVTP3×8).
- ② Remove the internal gear flange.
- ③ Remove the timing belt.
- ④ Pull connector CN12 (yellow) out.
- ⑤ Remove the FL cassette compartment section in the direction of arrow **A**.

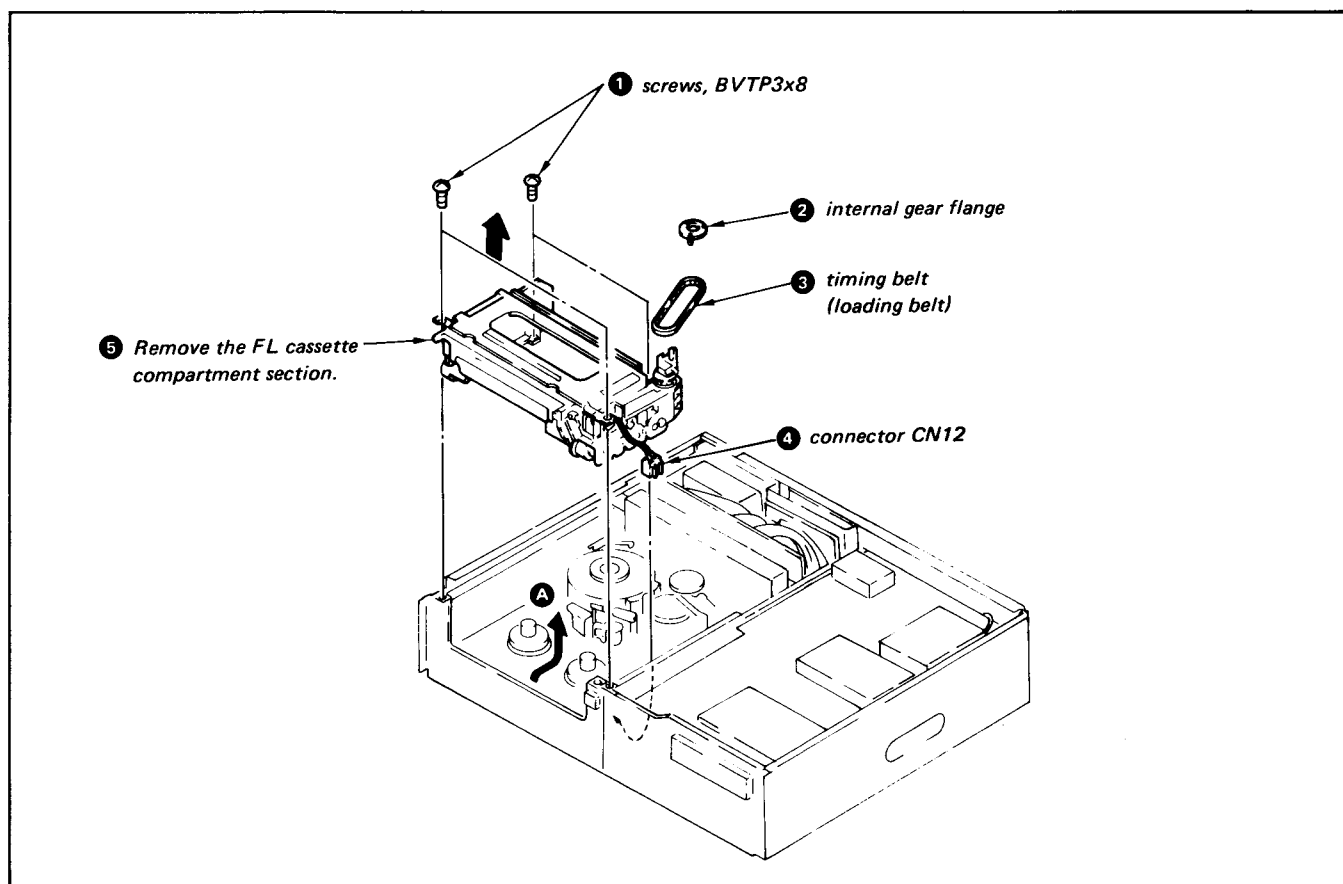


Fig. 3-13. Removal of the FL cassette compartment assembly

### 3-8. ADJUSTMENT OF THE FL CASSETTE COMPARTMENT

#### 3-8-1. Adjustment of the Position of the Right Gear of the FL Cassette Compartment Assembly

In the FL cassette compartment assembly, the cassette holder must always move parallel to the mechanical chassis. The gear system is used to control the amount by which the cassette holder advances so that this will be the case. Consequently, if the gears in this section slip out of mesh, the next time the unit is assembled the gear mesh must be adjusted to the correct position; otherwise the cassette will not feed properly.

##### [Adjustment of the gear positions]

- ① Get a positioning rod about 200 mm long and 1.5 mm in diameter ready.
- ② While passing the positioning rod through the combination of the drive arm right and cassette ON cam, fit the latter on the right side plate. Similarly, fit the drive arm left onto the left side plate.
- ③ Similarly, while passing the positioning rod through the worm wheel, fit the latter onto the right side plate.
- ④ Similarly, while passing the positioning rod through the combination of the limiter gear and cassette OFF cam, fit the latter onto the right side plate.

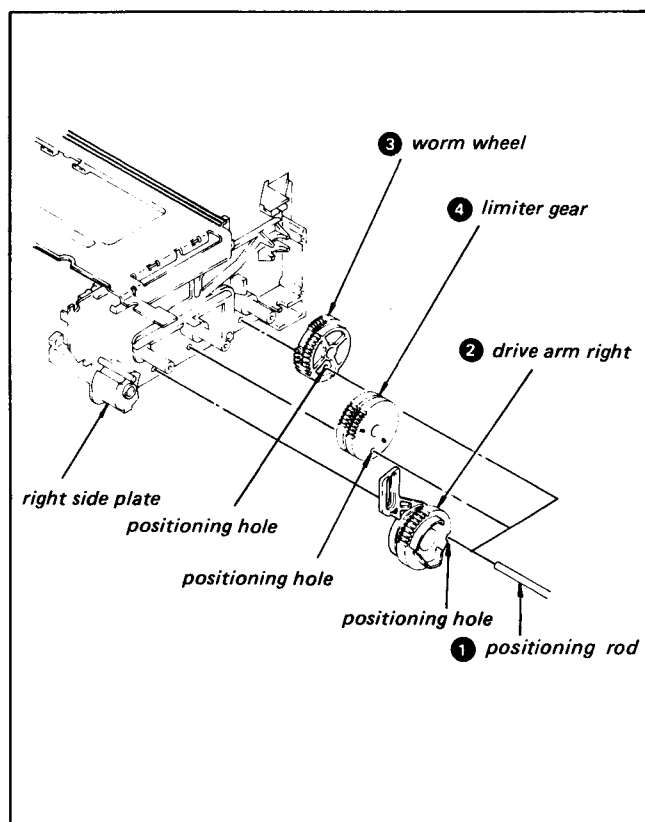


Fig. 3-14. Positioning of the FL cassette compartment gears

#### 3-8-2. Cassette ON Switch Operation Check and Adjustment

##### [Method of checking]

When inserting a cassette into the FL cassette compartment assembly, confirm that, as the cassette is inserted, the microswitch comes ON when the center of the drive roller is 10 to 13 mm from the end of the guide groove, as shown in Fig. 3-15. (A clicking sound can be heard after the switch is pressed.)

##### [Method of adjustment]

Bend the tip of the cassette ON switch in the direction of the arrow.

Adjust so that the cassette ON switch comes ON when the above distance is 10 to 13 mm, and finally tighten the screw.

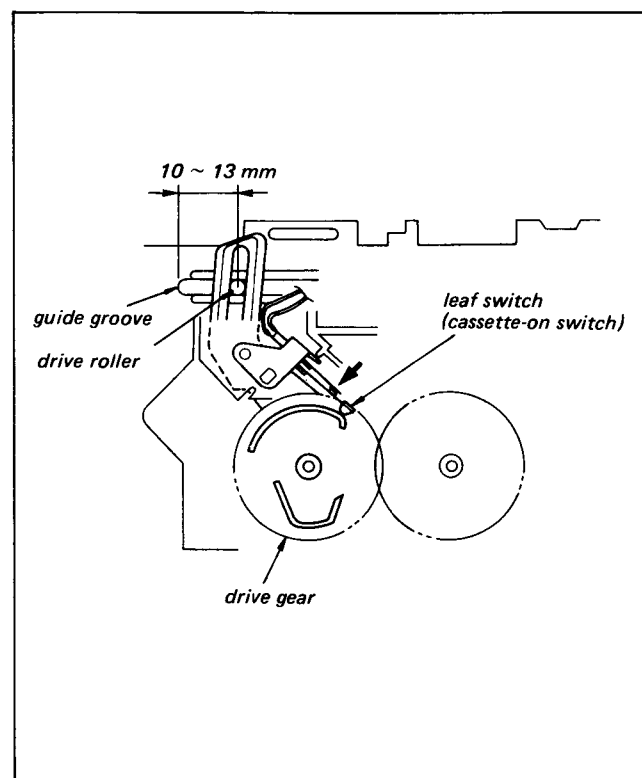


Fig. 3-15. Cassette ON switch operation check and adjustment



### 3-8-3. Checking and Adjustment of the Cassette Door Assembly

#### [Method of checking]

With the door opening and closing arm returned all the way in the direction of arrow **A**, check to make sure that the upper and lower doors are vertical.

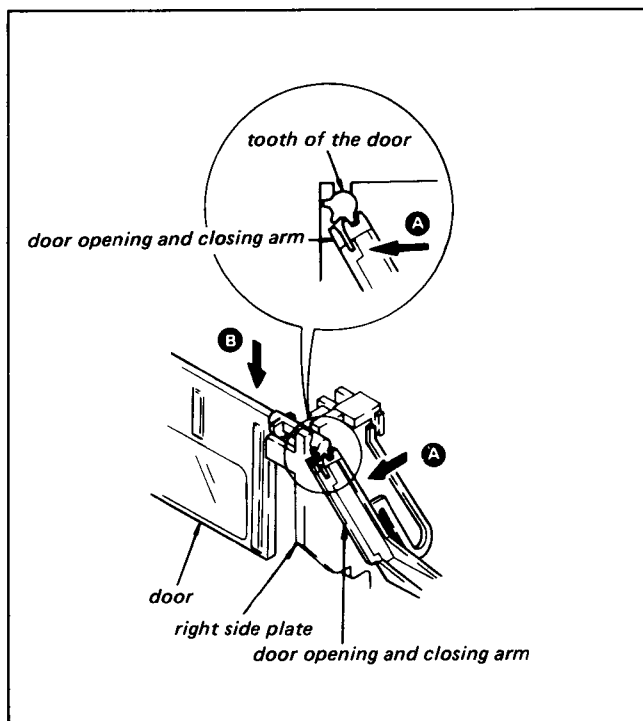


Fig. 3-16. Adjustment of the position of the cassette door assembly

#### [Method of adjustment]

check to make sure that the door opening and closing rack plate has returned all the way. Then, close the upper door together in the direction of arrow **B** so that it is vertical, and mesh the gears.

### 3-8-4. Mounting the FL Cassette Compartment Assembly (Fig. 3-17.)

- ① Hook the two holes of the FL cassette compartment assembly onto the mechanical chassis, then place the compartment in the specified position on the chassis.
- ② Loosely tighten the 4 mounting screws of the FL cassette compartment assembly. Move the FL cassette compartment assembly forward and backward with respect to the mechanical chassis, set it in the correct position, then tighten the mounting screws all the way.
- ③ Connect the timing belt (loading belt) between the threading motor and the worm gear, then hold it in place with the internal gear flange.
- ④ Press the tension roller arm in the direction of the arrow to adjust the tension of the timing belt (loading belt), then fix it in place with the arm fixing screw.
- ⑤ Insert the harness sticking out from the FL cassette compartment into connector CN12 on SS-32 board.

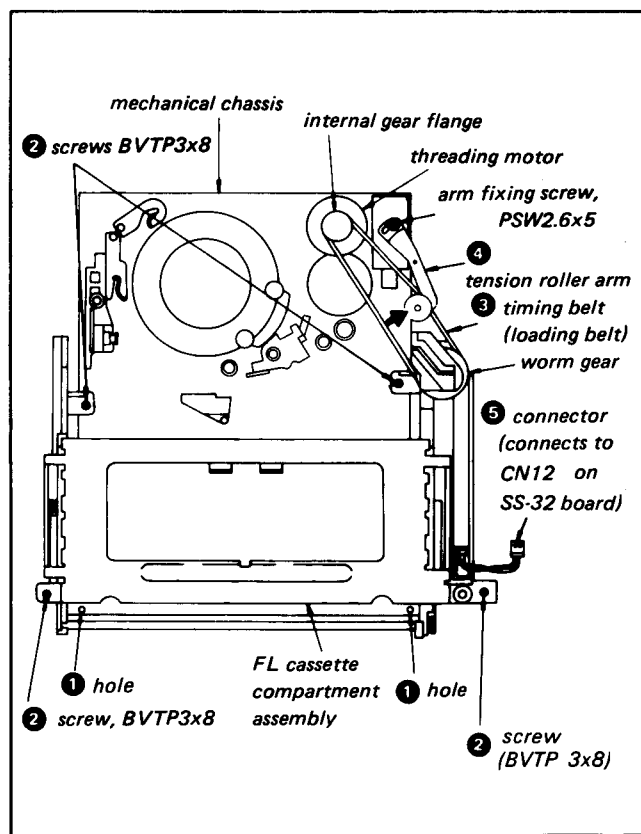


Fig. 3-17. Mounting the FL cassette compartment assembly

### 3-9. REMOVAL OF THE No. 2 AND No. 3 GUIDES

#### 3-9-1. Removal of the No. 2 Guide

- ① Remove the 1x3 tap-in screw.
- ② Remove the 1.4x3 tap-in screw.
- ③ Remove the No. 2 guide assembly.

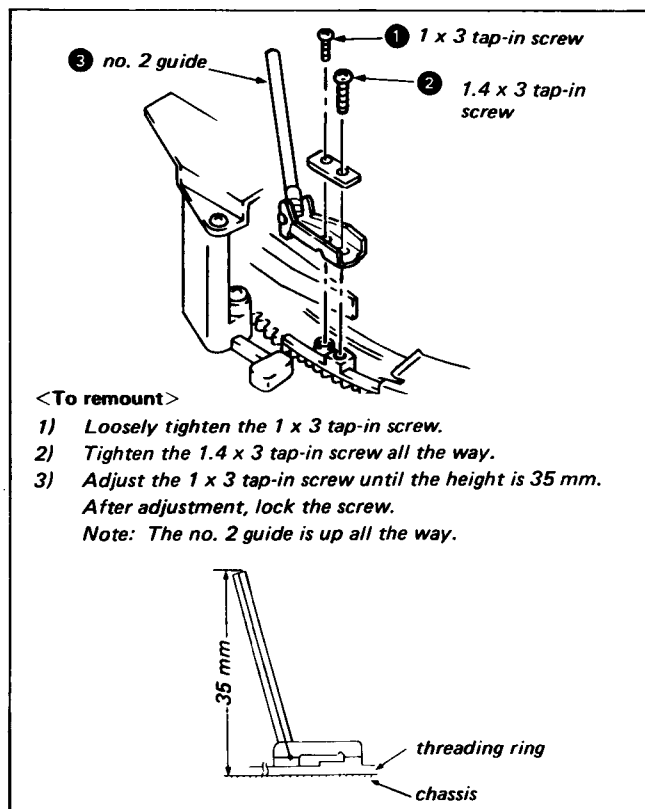


Fig. 3-18. Removal of the no. 2 guide

#### 3-9-2. Removal of the No. 3 Guide

- ① Remove the 1x3 tap-in screw.
- ② Remove the 1.4x3.5 tap-in screw.
- ③ Remove the limiter spring.
- ④ Remove the No. 3 guide assembly.

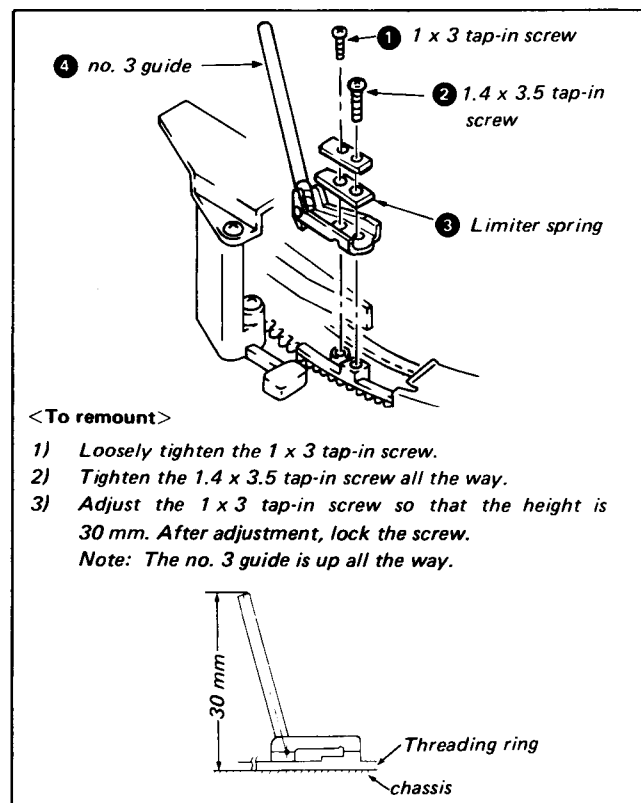


Fig. 3-19. Removal of the no. 3 guide

### 3-10.REPLACEMENT AND ADJUSTMENT OF THE S THREADING RING

#### 3-10-1.Preparation to Remove the S Threading Ring Removal of the AC Assembly, FE Head and Threading Motor (Fig. 3-20)

- ① Remove the cross-recessed head screw.
- ② Remove the No. 6 guide nut.
- ③ Remove the No. 6 washer.
- ④ Remove the No. 6 guide spacer.
- ⑤ Remove the compression coil spring.
- ⑥ Remove the 2 screws and AC bush, then remove the AC assembly and the FE head.

#### Note:

Since the AC assembly and the FE head are connected by a lead wire, be careful when removing them. It is not necessary to remove the compression coil spring below the AC assembly, but be careful not to use it.

- ⑦ Remove the 3 screws, then remove the threading motor assembly by pulling it up and out.

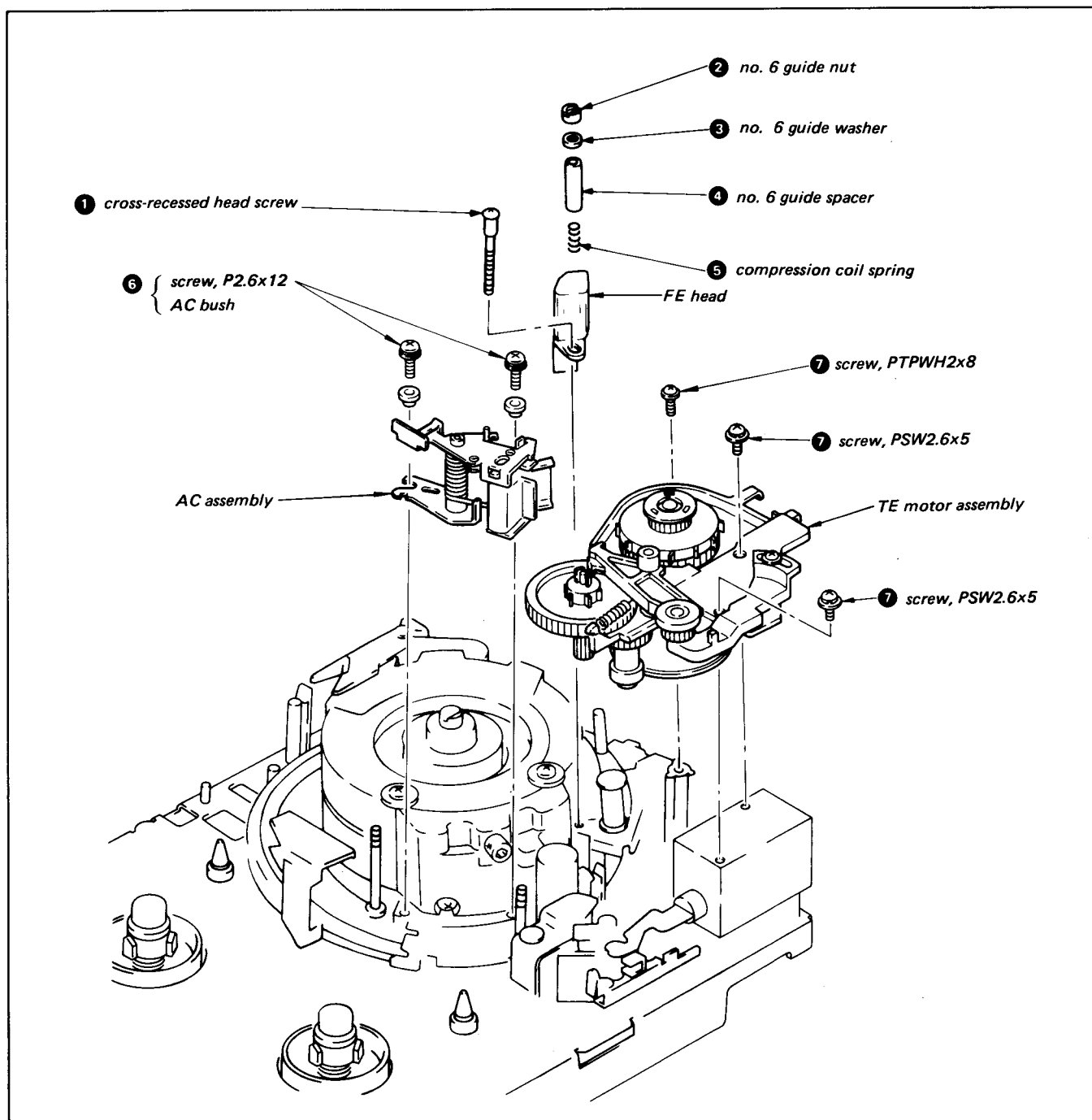


Fig. 3-20. Removal of the AC assembly, FE head and TE motor assembly.

### Removal of Miscellaneous Parts (Fig. 3-21)

Proceeding in the same manner as in replacement of the drum assembly, measure the width of the gap between the upper drum and the adjusting plates (Fig. 3-7).

- ① Remove the screw, then remove the tape guide ground plate and adjusting plates 1 and 2.
- ② Remove the two screws, then remove the tape holder assembly.
- ③ Remove the screw, then remove the guide plate.
- ④ Remove the 2 PTPWH2×8 screws and the M2.6 screw, then remove shuttle guide 2.

- ⑤ Remove the 3 PTPWH2×8 screws and the M2.6 screw. Then remove the 2 claws holding shuttle guide 1-YA in place, and finally remove shuttle guide 1-YA.
- ⑥ Remove the slant base assembly.
- ⑦ Remove the BVTT2.6×6 screw, then remove the pinch liner link.

#### Note:

After removing the guide plate, do not thread or unthread a tape with the shuttle guide mounted.

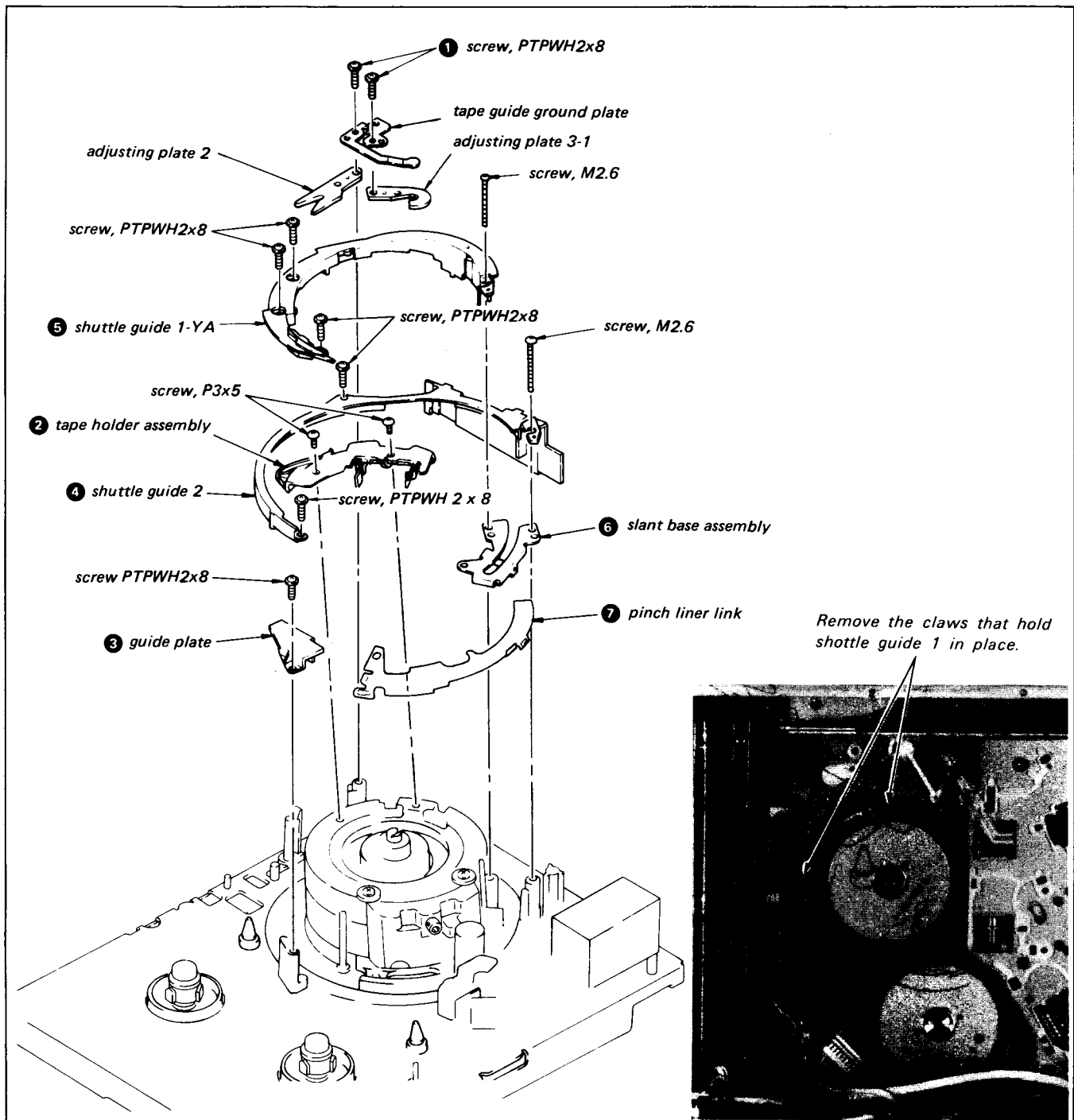


Fig. 3-21. Removal of miscellaneous parts

### 3-10-2. Removal of the S Threading Ring (Fig. 3-22)

- ① Turn the stop washer and remove the ring roller (B) and (C).
- ② Remove the screw, then remove the ring roller adjustment plate.
- ③ Remove the S threading ring.

**Note:**

Once a stop washer has been removed, do not use it again.

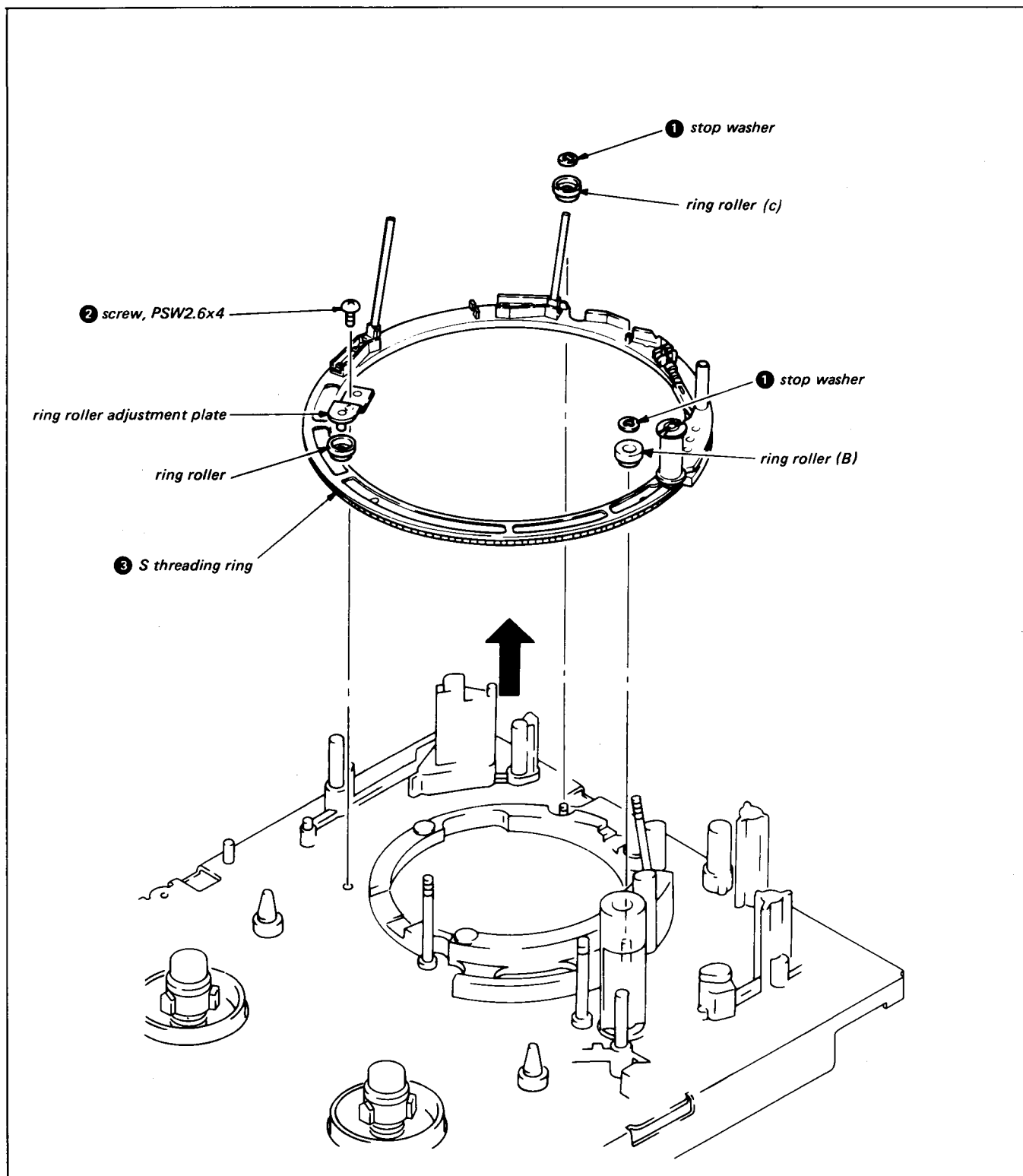


Fig. 3-22. Removal of the S threading ring

### 3-10-3.S Threading Ring Mounting and Position Adjustment (Fig. 3-23)

- ① Set the slider gear assembly in the unthreading completed position.  
(Slider gear assembly set so that it is up against part T slider stop mold.)
- ② In this condition, fit the threading ring into place, match the chassis hole ( $3\phi$ ) of part A with the S threading ring hole ( $1.5\phi$ ), and mesh with the drive gear teeth.
- ③ Attach ring roller (B) and fix in place with a stop washer.
- ④ Attach the ring roller, and fix in place with the adjustment plate.

**Note:**

After replacement and mounting are completed, adjust the AC assembly as explained in the section on tape path adjustment.

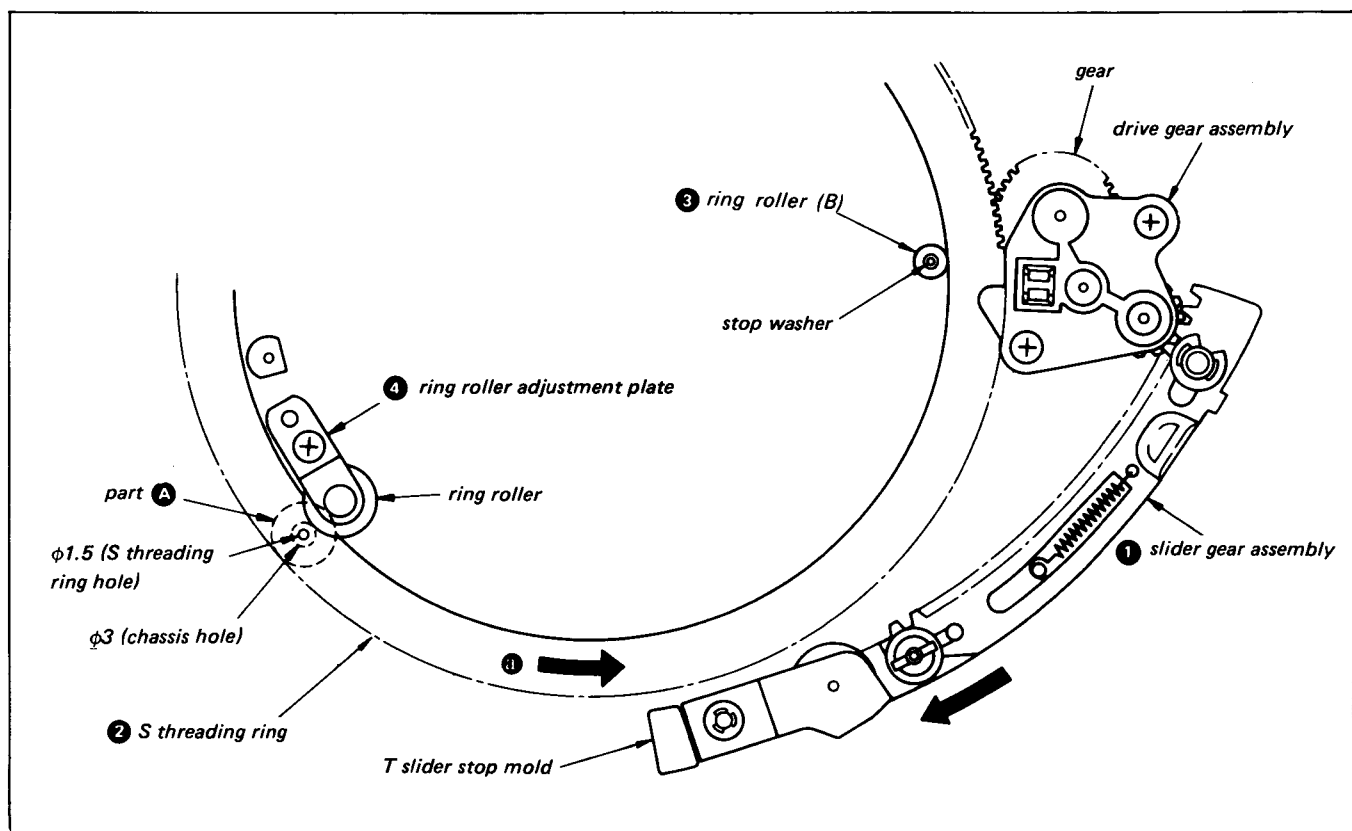


Fig. 3-23. S threading ring position adjustment

### 3-11. PINCH SNAP-FIT LIMITER GAP CHECK AND ADJUSTMENT

#### [Method of checking]

- 1) Set in the threading completed condition.
- 2) With the plunger pushed in all the way, confirm that the thickness of the pinch snap-fit limiter gap is 0.4 mm to 0.6 mm. If it is not, adjust as explained under [method of adjustment] below.

#### [Method of adjustment]

- ① With the pinch solenoid in the absorbed condition (when the plunger is pushed in all the way), loosen the adjustment screw.
- ② Press the pinch limiter adjustment plate in the direction of arrow **a** with an ordinary screwdriver, as in section **A** in the diagram, and adjust until the thickness of the gap in 0.4 mm to 0.6 mm.  
Tighten the adjustment screw and then lock it to fix everything in place.

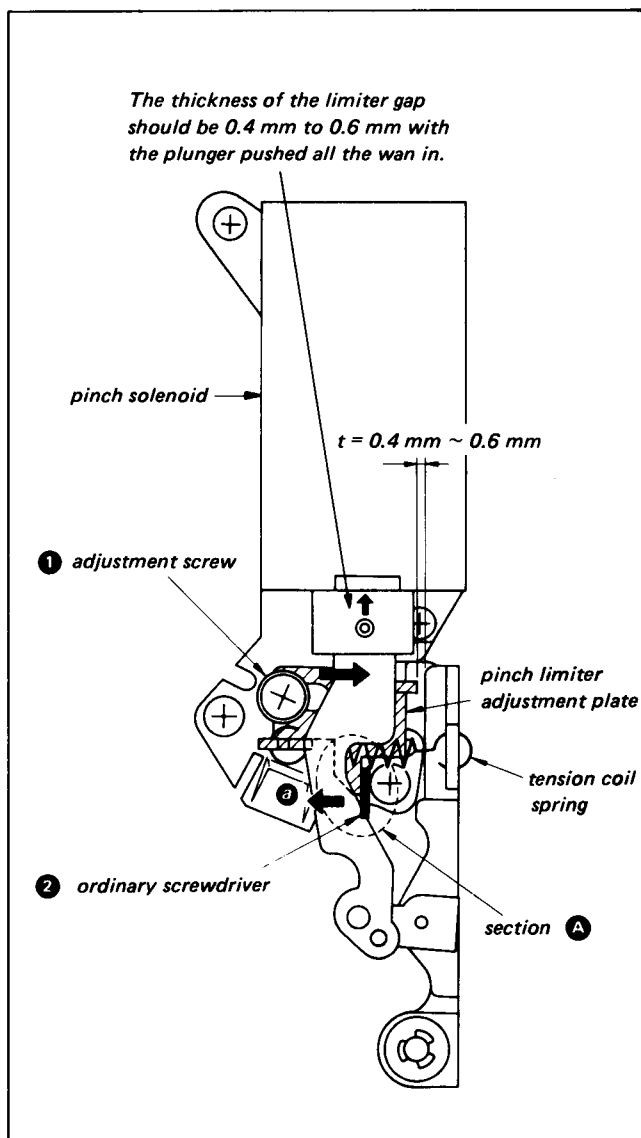


Fig. 3-24. Pinch snap-fit limiter gap adjustment plate

### 3-12. THREADING END SWITCH AND T COIL SENSOR

#### 3-12-1. Threading End Switch (TE Switch) Position Check and Adjustment

##### [Method of checking]

Turn the S threading ring manually. Check to make sure that, when the lock roller moves from above the straight line part of the notch in the ring (Fig. 3-25, section A) to 1/3 of the way down it and back, the TE switch turns ON and OFF. This can be confirmed from the clicking sound.

If the lock roller has to move outside of this range before the switch will turn ON and OFF, adjust as explained below.

##### [Method of adjustment]

- 1) Set the lock roller between the top of the notch in the S threading ring and 1/3 of the way down it, turn the TE switch in the direction of the arrow and, when the switch turns ON (with a clicking sound), fix the TE switch in place.
- 2) When the adjustment is completed, repeat the check as described under [method of checking].

##### [Removal]

- 1 Remove the tension coil spring that is attached to the S coil sensor assembly, then remove the S coil sensor.
- 2 Remove the lock arm assembly in the direction of arrow A.

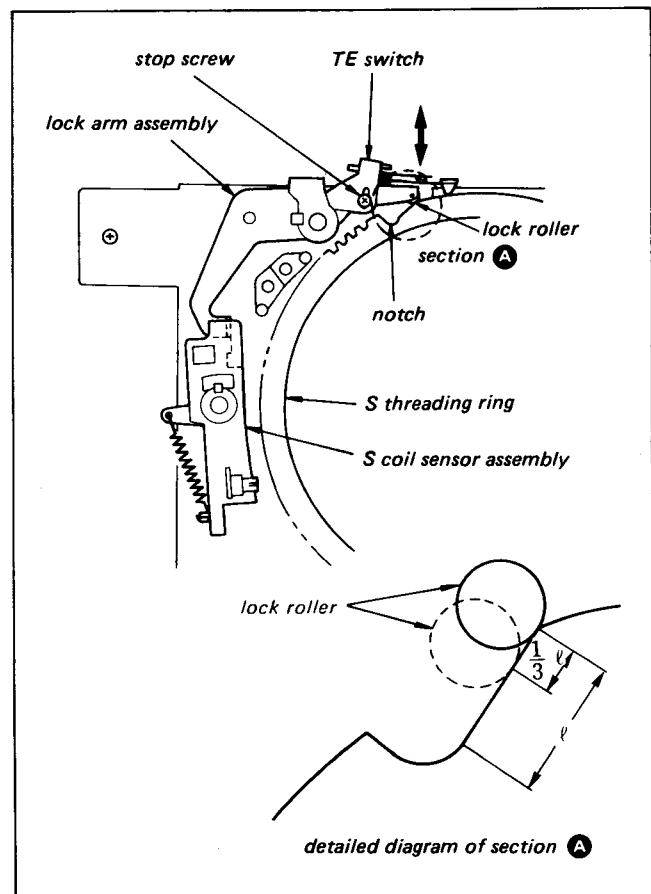


Fig. 3-25. TE switch position adjustment

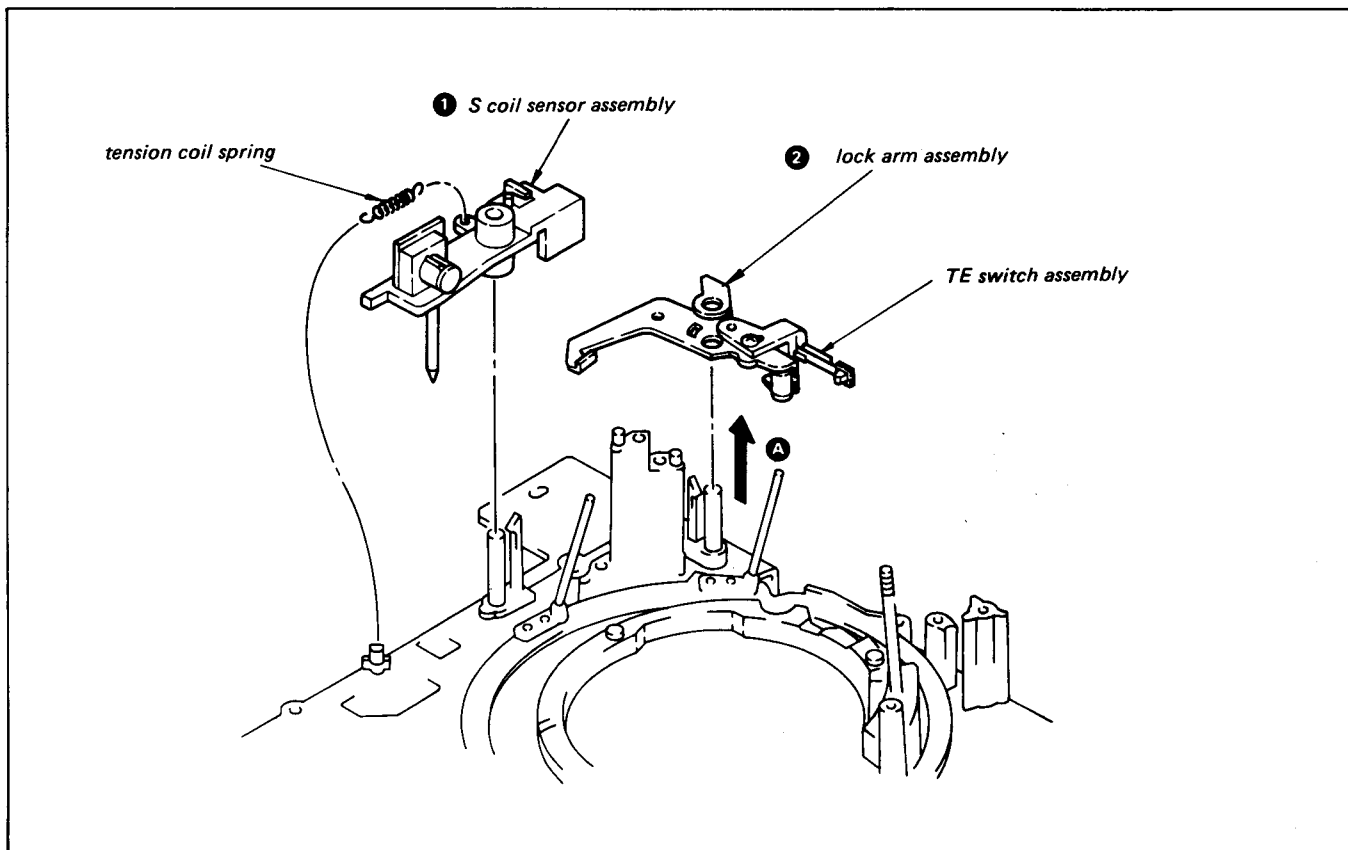


Fig. 3-26. Removal of the TE switch assembly and lock arm assembly



### 3-12-2. T Coil Sensor Mounting and Operation Check

#### [Method of checking]

Confirm that T coil sensor link ① is pressed and T coil sensor ② moves in the direction of arrow B when the T slider gear assembly is moved in the direction of arrow A.

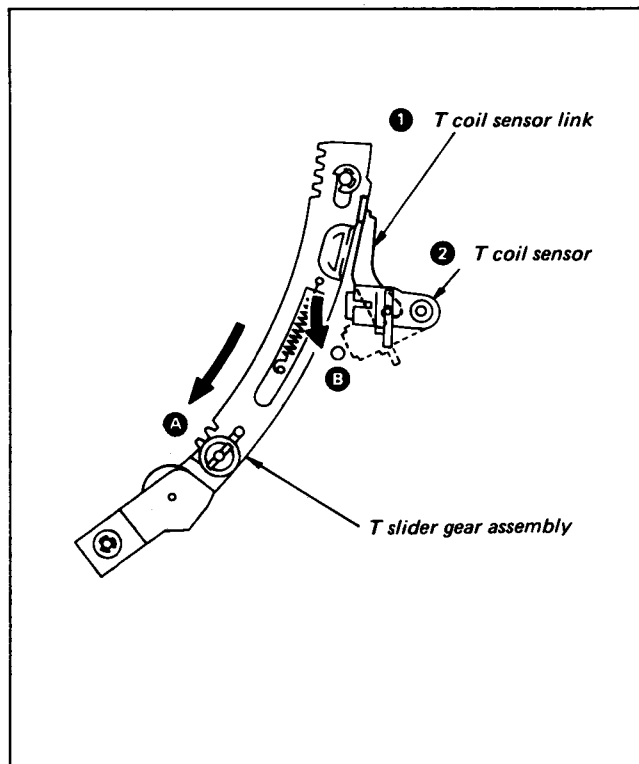


Fig. 3-27. T coil sensor operation check.

#### [Method of mounting]

- ① Place T coil sensor link in the prescribed position.
- ② Match up the T coil sensor hole with the chassis shaft A and insert. Place so that it engages with T coil sensor link.
- ③ Hook the tension coil spring on the T coil sensor and chassis claw.

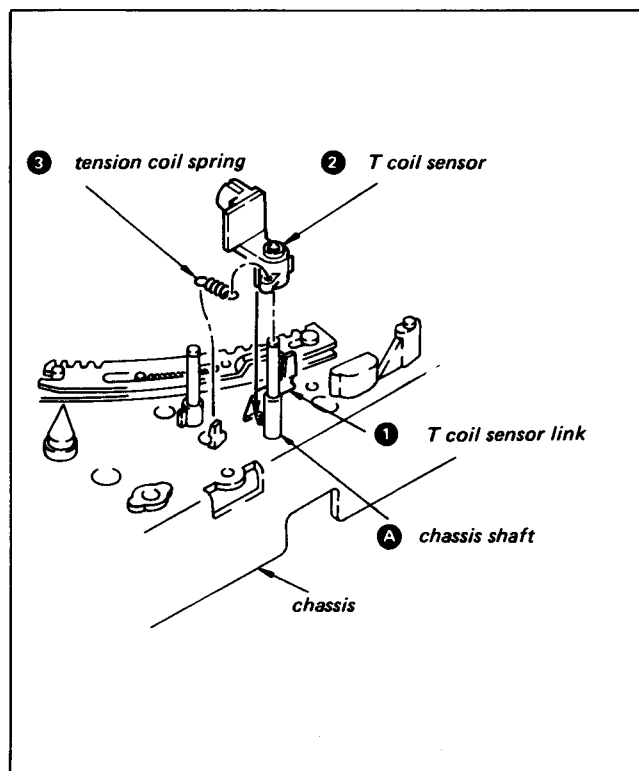


Fig. 3-28. T coil sensor link and T coil sensor mounting.

### 3-13. REMOVAL AND ADJUSTMENT OF THE REEL BASE BLOCK ASSEMBLY

#### 3-13-1. Removal of the Reel Base Block Assembly

- ① Turn the unit so that the top surface of the main body faces down.
- ② Remove the 4 B3×14 screws.
- ③ Remove the reel base block assembly in the direction indicated by the arrow **A**.

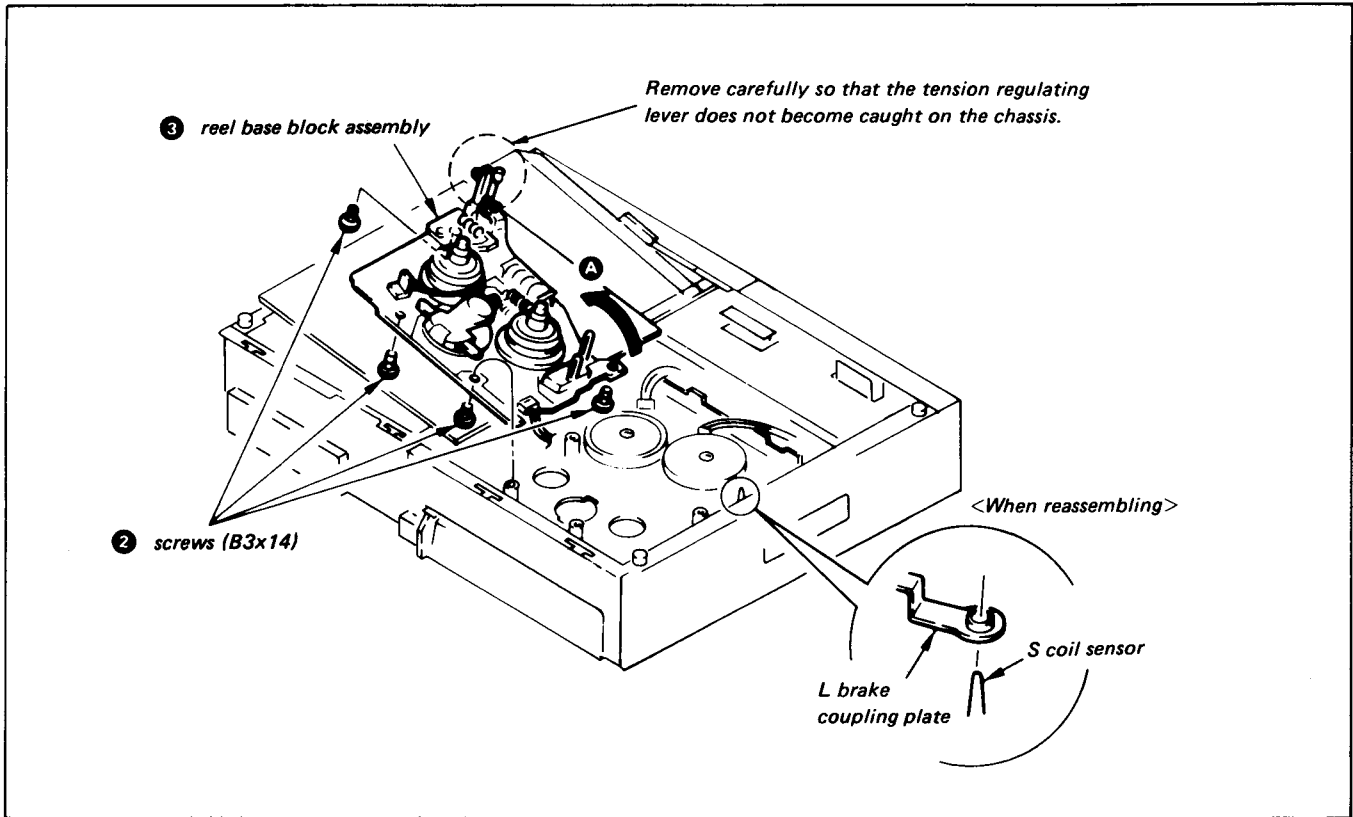


Fig. 3-29. Removal of the reel base block assembly

#### 3-13-2. Adjustment of the Position of the Tension Regulating Lever

##### [Method of adjustment]

- 1) Put the unit in playback mode.
- 2) Loosen the adjustment spring until the tape guide pin of the tension regulating lever assembly is positioned to the outside of the outer circumference of shuttle guide 1-YA, as shown in Fig. 3-30. Then adjust by moving the tension regulating band assembly in the direction of arrow **A**.
- 3) After adjustment, tighten the adjustment screw, being careful that the tension regulating band assembly does not move.

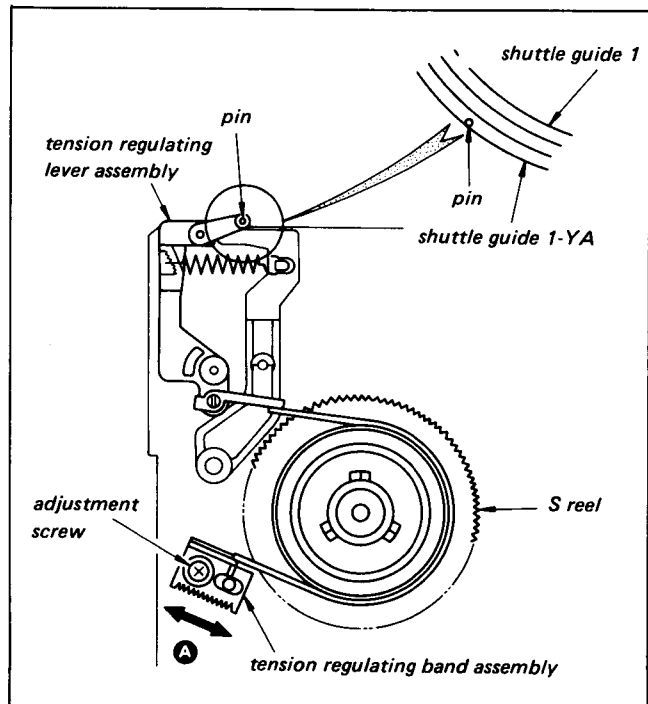


Fig. 3-30. Adjustment of the position of the tension regulating lever

### 3-14. ADJUSTMENT OF THE FORWARD AND BACK TENSION

#### [Method of measurement]

- 1) Insert the torque cassette (SL-0003C) and put the unit in playback mode.
- 2) Read the value on the meter on the S reel side after the needle has gone around about once.

The correct value is  $44 \text{ g} \cdot \text{cm} \pm 4 \text{ g} \cdot \text{cm}$ .

#### Notes:

- i) The set must be perfectly level during this measurement.
- ii) After the measurement, the tape can become slack when the stop button is pressed. If this happens set the unit in forward mode to take up the slack before removing the tape.

#### [Method of adjustment]

Move the position of the tension coil spring that is hooked on the tension regulating lever assembly in the direction of arrow **A** until the measured value falls within the correct range.

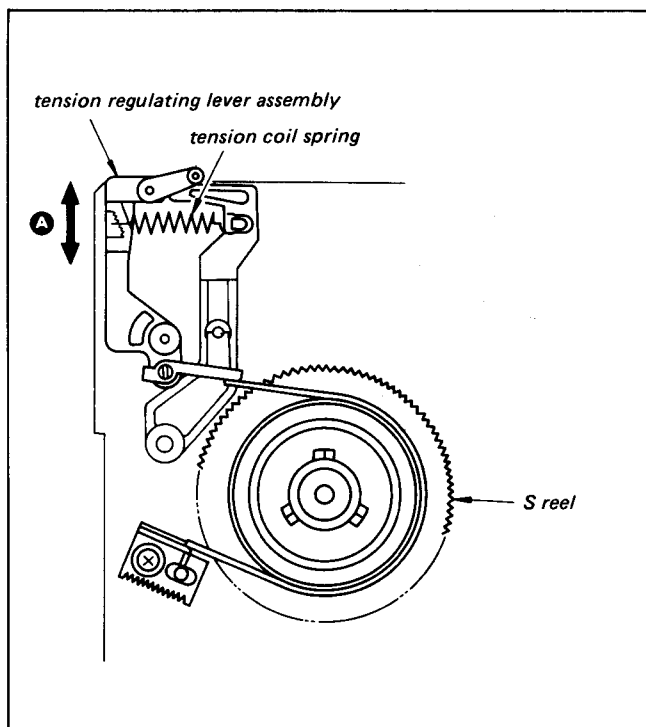


Fig. 3-31. Adjustment of the back tension

### 3-15. ADJUSTMENT OF THE FORWARD TORQUE

#### [Method of measurement]

- 1) Insert the torque cassette (SL-0003C) and start to record a telecast in  $\beta$ II mode.
- 2) Read the value on the meter on the T reel side after the needle has gone around about once. The correct range is  $45 \text{ g} \cdot \text{cm} \sim 90 \text{ g} \cdot \text{cm}$ .

#### [Method of adjustment]

- 1) Remove the front panel.
- 2) Turn potentiometer RV801 on TU-58 board to adjust the torque until its value falls within the correct range.

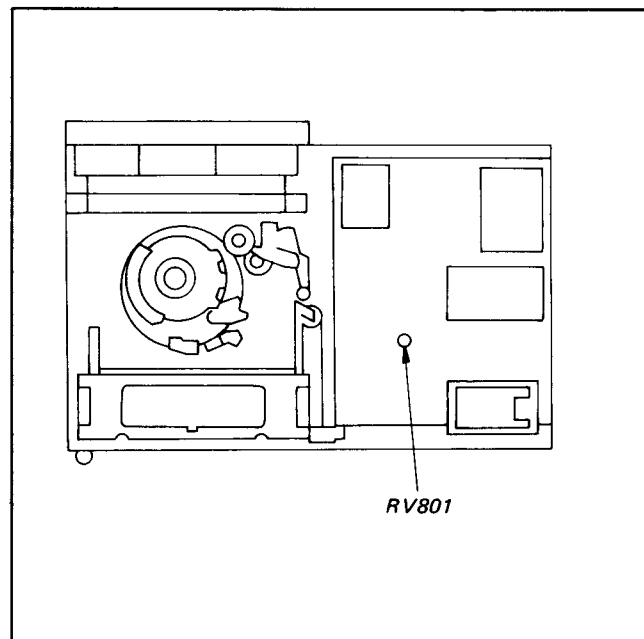


Fig. 3-32. Adjustment of the forward torque

#### Note:

When the forward torque is weakened during the measurement the tape can become slack, in which case the set will go into emergency stop mode. In such a case, the only switches that will work are the cassette eject switch and the power switch. It is necessary to temporarily remove the cassette, or to turn the power OFF and back ON.

## 4. TAPE PATH ADJUSTMENT

### 4-1. TRACKING ADJUSTMENT

This adjustment has a large effect on the picture quality in each mode and on the interchangeability of tapes, so it should be done carefully.

4-1-1. Preparation for adjustment

4-1-2. Adjustment on the entrance side

4-1-3. Adjustment on the exit side

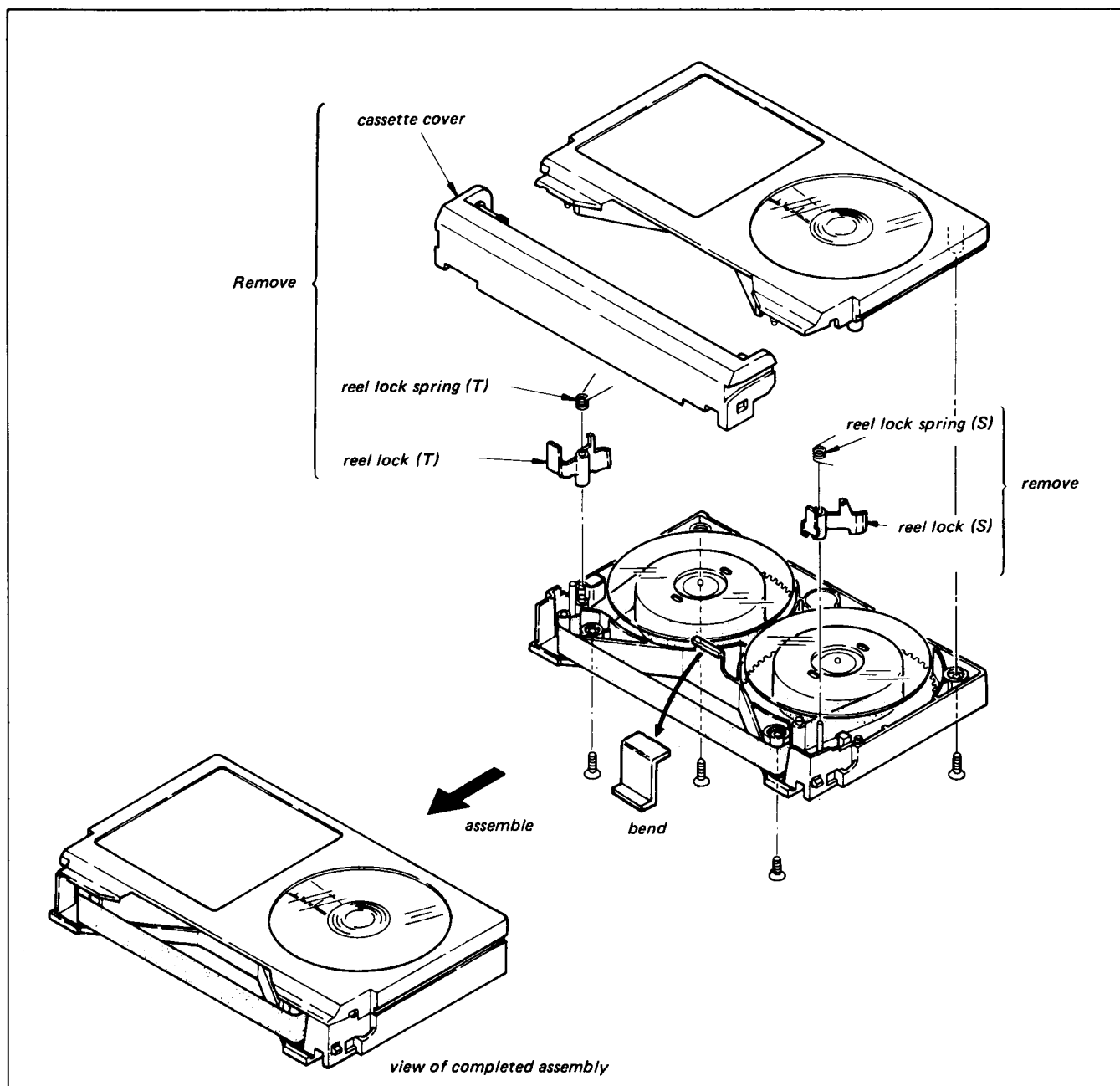


Fig. 4-1.

#### 4-1-1. Preparation for Adjustment

- 1) Remove the cassette cover of the alignment tape in accordance with Fig. 4-1.
- 2) Clean the surface contacted by traveling tape (tape guide, drum tape trailing surface, capstan shaft, pinch roller, AC, FE head surface) with a chamois cloth dipped in methanol.
- 3) Connect the oscilloscope as follows:  
channel 1: CN4-pin ③ (RP-28 board)  
external trigger: CN4-pin ① (RP-28 board)
- 4) Play back the 1 kHz signal on the tracking section of the alignment tape.
- 5) Confirm that the oscilloscope radio frequency output waveform is flat and that the amplitude is a maximum. (Turn the tracking knob right and left to increase and decrease the amplitude while the waveform remains flat.) When the amplitude of the waveform is a maximum, confirm that the fluctuations and contact of the radio frequency output waveform meet the standards given in Fig. 4-2. If they do not, go through the procedure given in step 6).
- 6) If the entrance waveform cannot be made flat, as shown in Fig. 4-3 (a), by turning the tracking knob, go through the "entrance side adjustment" described in 4-1-2; if the exit waveform shown in Fig. 4-3 (b) cannot be made flat, go through the "exit side adjustment" in 4-1-3.

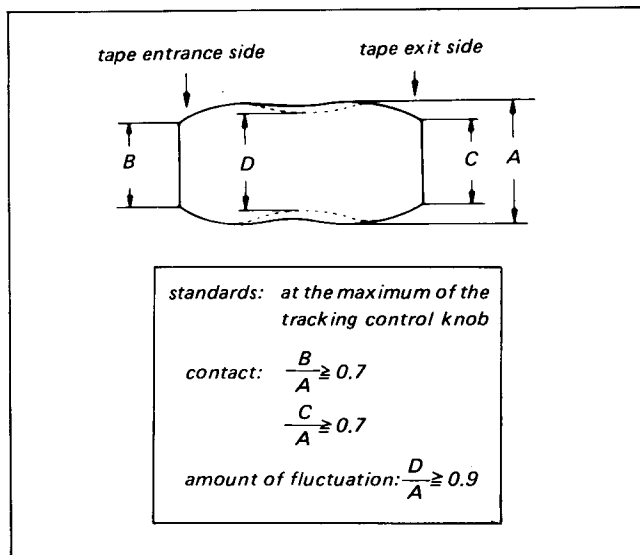


Fig. 4-2.

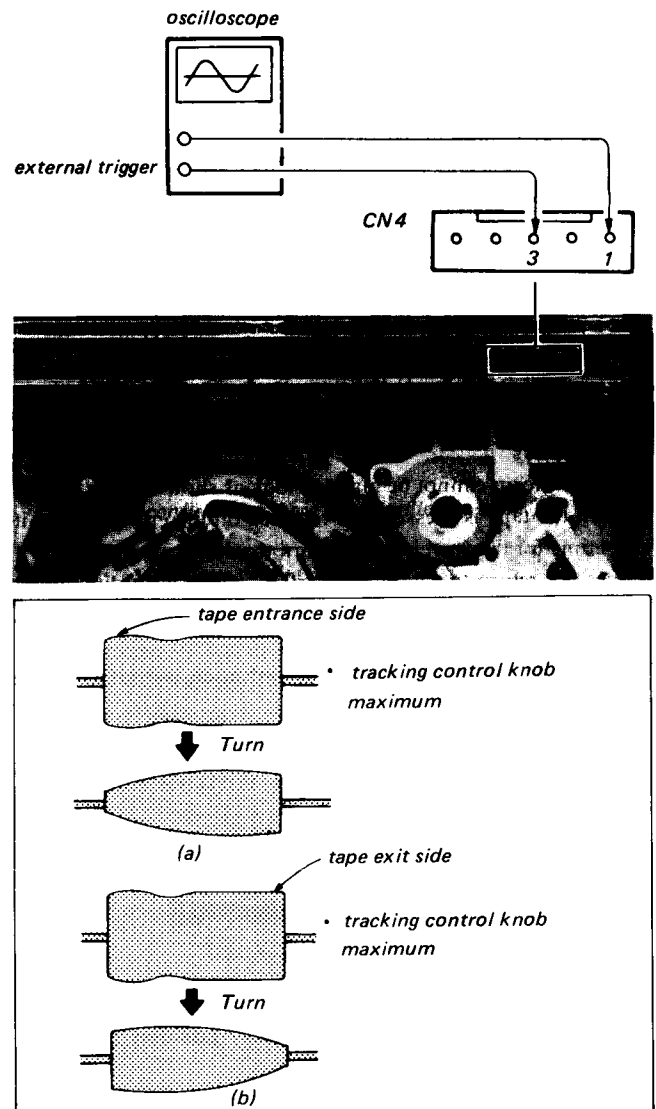


Fig. 4-3.

#### 4-1-2. Entrance Side Adjustment

Whenever the entrance side adjustment is performed, the exit side adjustment must also be performed. The various tape guides and adjustment positions are shown in Fig. 4-5.

- 1) Turn the No. 6 guide counterclockwise to free the movement of the tape as it enters the drum.
- 2) Turn the tracking control knob until the amplitude of the waveform is about 60% of its maximum.
- 3) Loosen No. 5 guide lock screw ① and turn the No. 5 guide until the entrance waveform sticks up a little above flat, as shown in the figure below. Then tighten the No. 5 guide lock screw (Fig. 4-6).

**Note:**

After tightening No. 5 guide lock screw ①, confirm that it is as in the figure below.

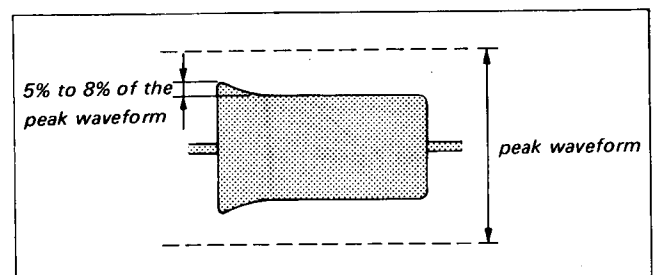


Fig. 4-4.

- 4) Next, lower the No. 6 guide until the waveform is flat.
- 5) Press the tape down between the No. 4 and No. 5 guide with a finger to lower the entrance side radio frequency waveform, then let go and confirm that the waveform returns to what it was before.
- 6) In this condition, check the clearance and curl of the No. 5 guide. If there are clearance and curl, adjust as explained in subsequent sections.

**Note:**

**The tape tension between the No. 3, No. 4 and No. 5 guides must be balanced. If it is not, adjust the tilt of the No. 3 and No. 5 guides.**

If the waveform cannot be made to look as shown in Fig. 4-4, or if when the tape is pressed and released on the entrance side it takes time for the waveform to return to what it was before, or if it does not return to what it was before, adjust according to the instructions given below.

**[What to do when the waveform entrance output will not rise]**

- 1) Check to see if the up-down tension between the No. 3, No. 4 and No. 5 guides is uniform. If it is not, adjust the tilt of the No. 3 and No. 5 guides.

**Note:**

**The lower flange of the No. 4 guide must not protrude.**

- 2) Raise the lower flange of the No. 4 guide to raise the entrance output.

**Note:**

**It is sufficient to raise the lower flange of the No. 4 guide to 0.4 mm from its lowest position (within a rotation angle of 360°).**

- 3) If the operation performed in step 2) fails to raise the waveform output, turn the No. 5 guide tilt adjustment screw slightly to the left, and the entrance output should rise.

**[What to do when the waveform entrance output will not drop]**

- 1) Remove the adjusting plate 3-1 of the No. 3 guide from the drum. Just before the lower tension of the tape becomes slack, tighten screw ②.
- 2) If the tape is in contact with the lower flange of the No. 4 guide, lower the flange. If the tape is sticking up from the lower flange, adjust the tilt of the No. 5 guide so that the tape does not stick up from the lower flange of the No. 4 guide.

**[What to do when there is a clearance in the No. 5 guide]**

Turn the No. 4 guide counterclockwise to run the tape upward and eliminate the clearance in the No. 5 guide.

**Note:**

**At this time make sure that a large curl is not produced below the No. 4 guide.**

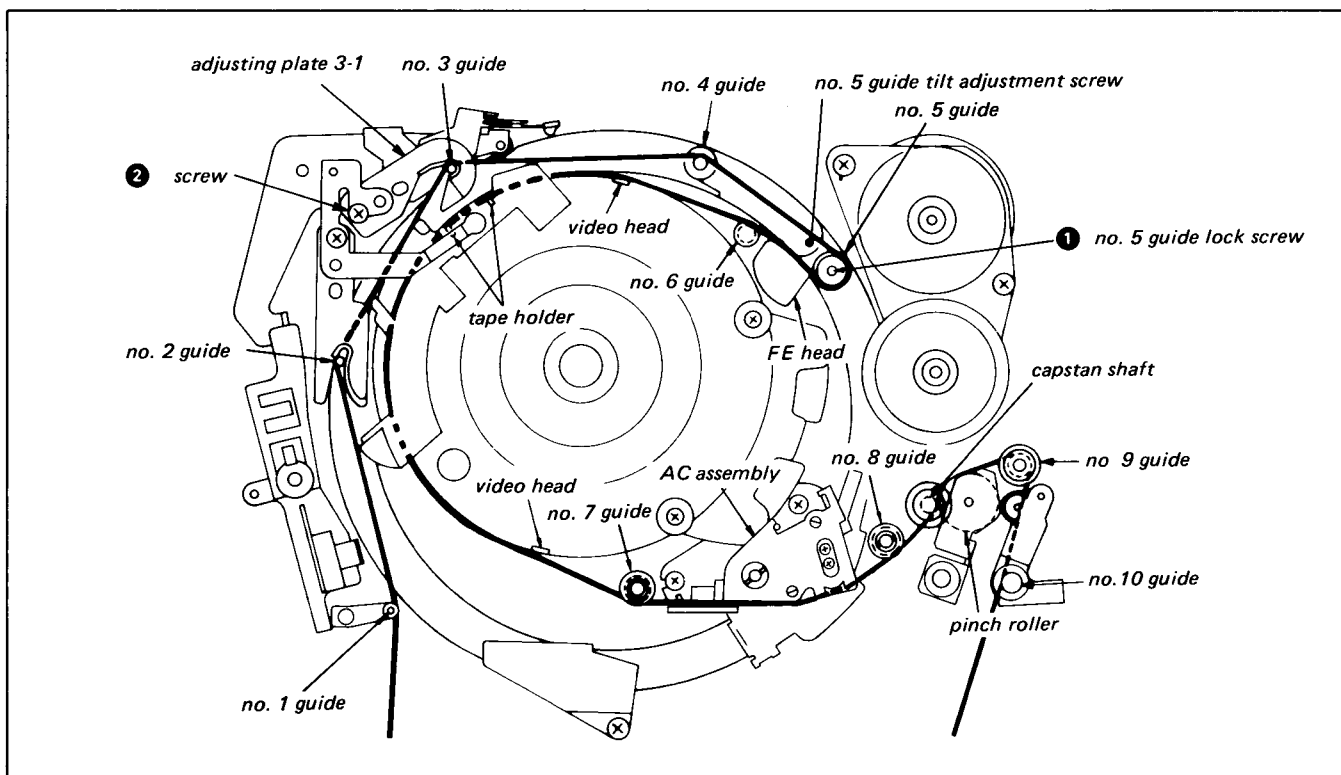


Fig. 4-5. Tape guide layout diagram

#### [What to do when there is a curl]

- 1) When there is a gap below the No. 4 guide: Just before the lower tension on the tape becomes slack, move adjusting plate 3-1 of the No. 3 guide to the outside.
- 2) When there is not a gap below the No. 4 guide (when there is a curl below the No. 4 guide):
  - i) Check to see if the No. 4 guide has been raised up too high. If it has been raised up too high, turn the adjusting plate clockwise to lower the No. 4 guide.
  - ii) If the curl still has not been removed after i), tighten the No. 5 guide tilt adjustment screw in the clockwise direction until the curl is removed.

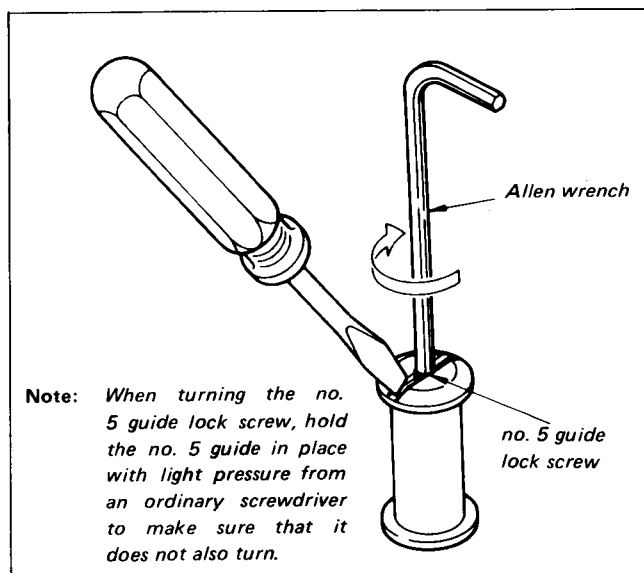


Fig. 4-6.

#### 4-1-3. Exit Side Adjustment

- 1) connect the oscilloscope to the No. ③ terminal on connector CN4 (on RP-28 board). Connect the external trigger to the No. ① terminal on CN4.
- 2) Play the tracking section of the alignment tape. Adjust the tracking knob to reduce the amplitude of the radio frequency output waveform to 60% of its maximum level.
- 3) Watch the radio frequency output waveform when the No. 7 and No. 8 guides are raised (by turning the respective guide nuts counterclockwise) to let the tape run free. This waveform is called to exit free waveform.

##### **Note:**

Be careful not to raise the guides too far. They should be raised only about 0.3 to 0.5 mm, and the tape should not contact the lower flange of the AC head.

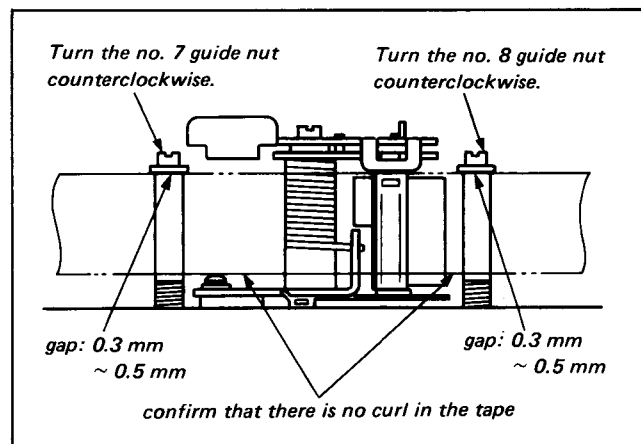


Fig. 4-7.

- 4) At this time, confirm that the exit free waveform is within the range shown in Fig. 4-8(a) and (b).
  - If it is outside of this range, adjust according to the procedure in 4-3.

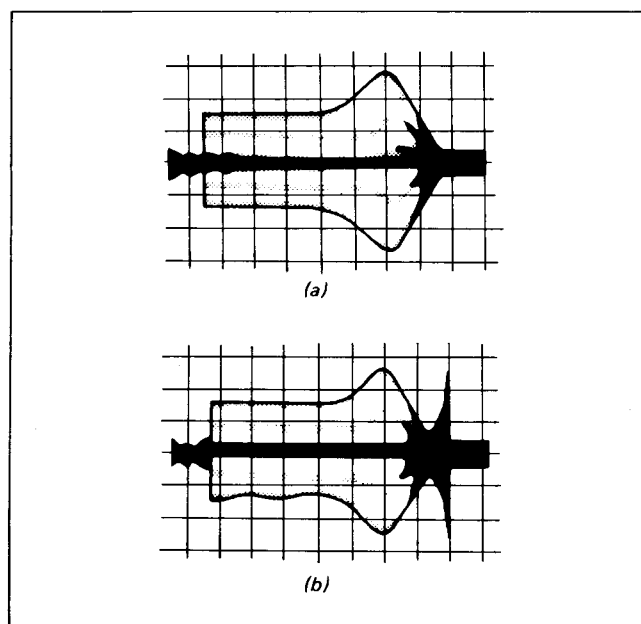


Fig. 4-8.

- 5) Turn the No. 7 guide nut clockwise until the waveform is flat.
- 6) Turn the No. 8 guide nut clockwise until the No. 8 guide is lined up with the tape (just before the waveform starts to change lower the guide until there is no curl).
- 7) During playback, confirm that no curl occurs in the No. 7 guide or the No. 8 guide.
- 8) During rewind, confirm that no curl or clearance occurs in the No. 8 guide. If there is a curl or clearance, adjust using the No. 9 guide. After adjustment, lock the guide nut.

## 4-2. ADJUSTMENTS AFTER REPLACEMENT OF THE AC ASSEMBLY

After removal or replacement of the AC assembly perform the adjustments listed below.

- 4-2-1. Exit side tracking adjustment
- 4-2-2. CTL head (AC assembly) position adjustment
- 4-2-3. Audio head (AC assembly) azimuth adjustment
- 4-2-4. Audio head (AC assembly) height adjustment

### 4-2-1. Exit Side Tracking Adjustment

- 1) Set the parallel plate (SL-0657 in the list of fixtures and tools) up against the unit as shown in Fig. 4-9, and turn the tilt adjustment screw to adjust the audio head vertically.

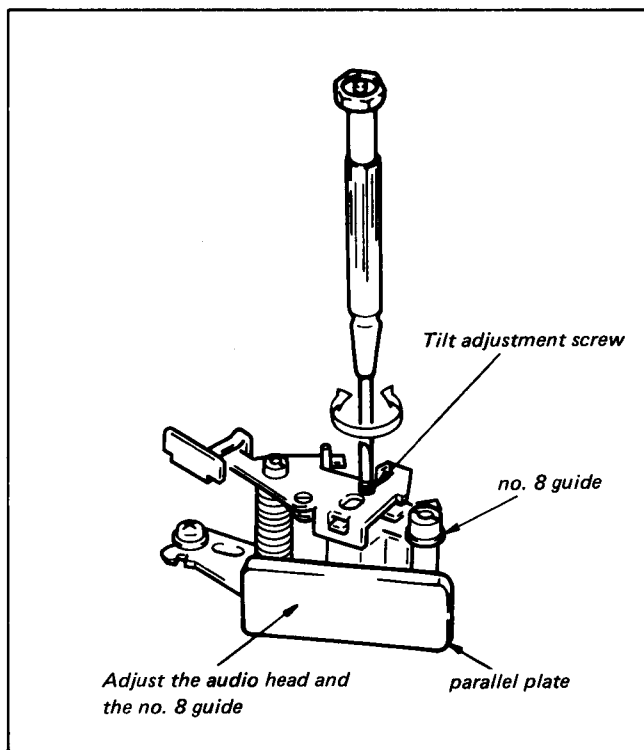


Fig. 4-9.

- 2) Connect the oscilloscope to terminal ③ of connector CN4 (on RP-28 board). Connect the external trigger to terminal ① of CN4.
- 3) Play the tracking section of the alignment tape. Adjust the tracking knob until the radio frequency output waveform amplitude is reduced to about 60% of its maximum level, maximum level.
- 4) Raise the No. 7 and No. 8 guides (turn the respective guide nuts counterclockwise) and observe the radio frequency exit free waveform when the tape runs free.

#### Note:

Be careful not to raise the guide too far. Raise it about 0.3 to 0.5 mm, and be careful that the tape does not contact the lower flange of the AC head.

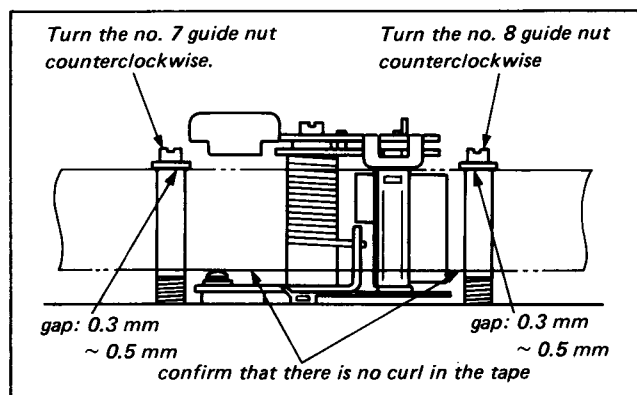


Fig. 4-10.

- 5) At this time, confirm that the exit free waveform is within the range shown in Fig. 4-11(a) and (b).

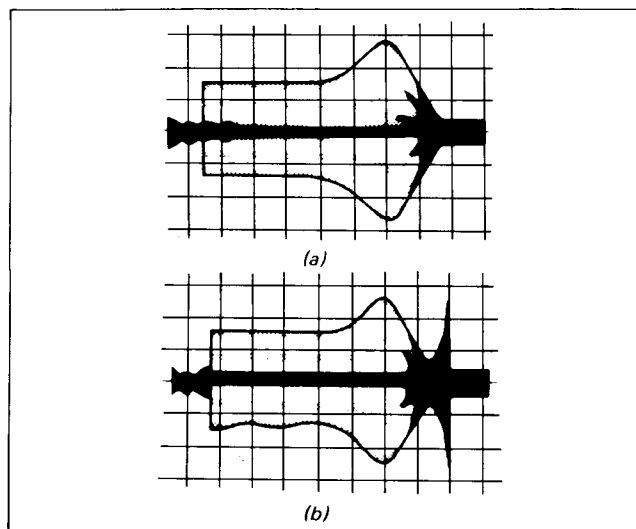


Fig. 4-11.

[When the waveform is outside this range]

- When the waveform is outside this range and has the form shown in Fig. 4-12, turn the tilt adjustment screw clockwise to adjust until the waveform is within the required range.

#### Note:

Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

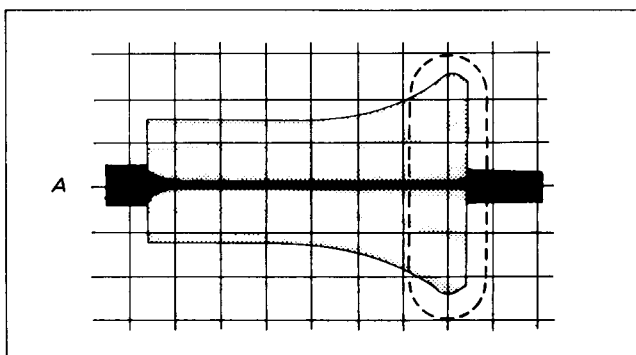


Fig. 4-12.



- When the exit free waveform is outside of the required range and has the form shown in Fig. 4-13, turn the tilt adjustment screw counterclockwise to produce waveform A (Fig. 4-12), then turn it clockwise to bring the waveform within the required range.

**Note:**

Finish the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

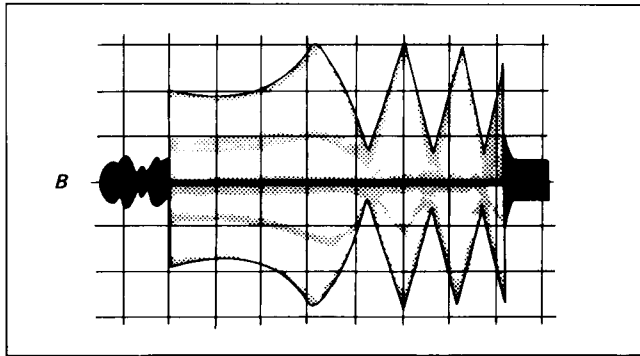
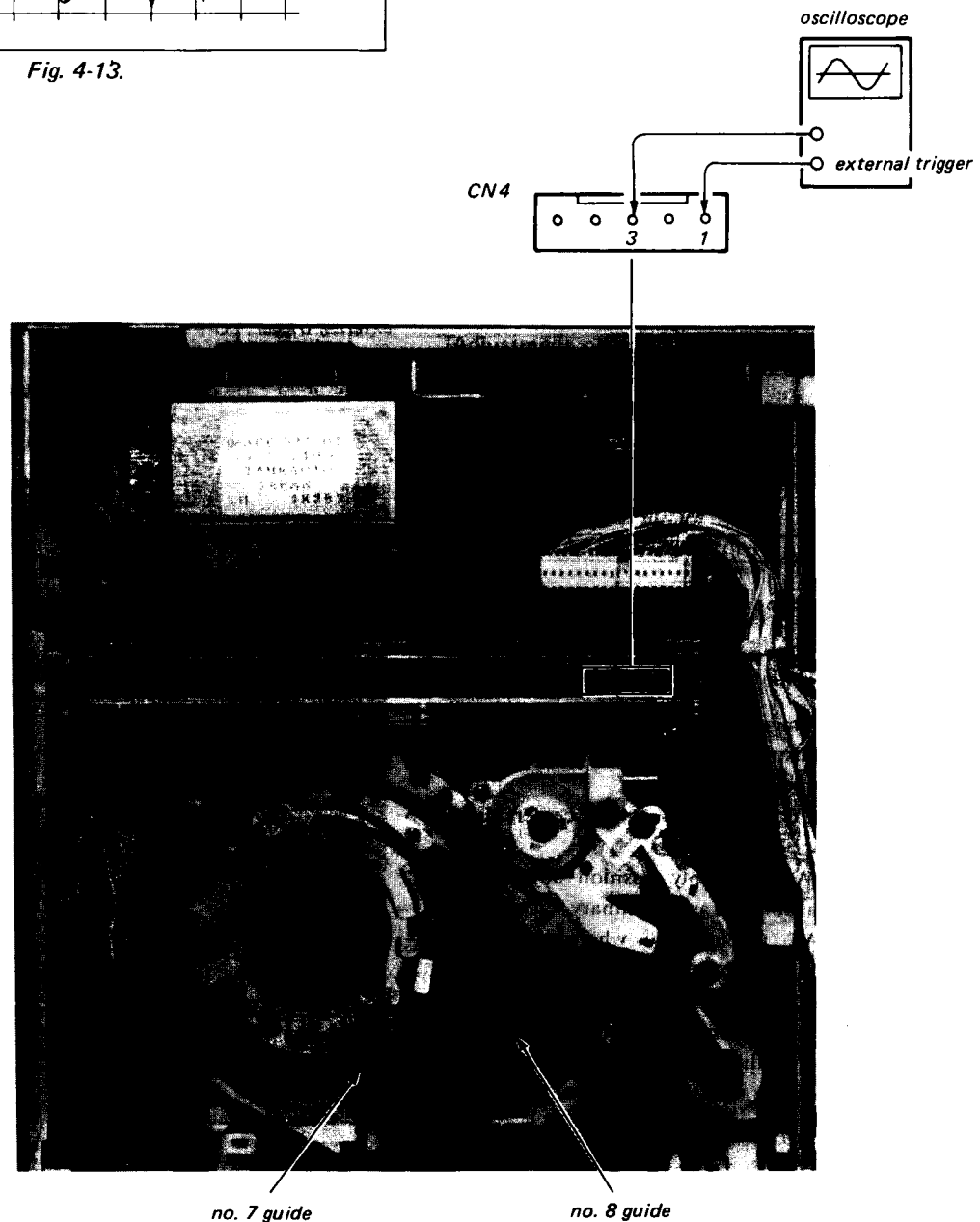


Fig. 4-13.

[Adjustment point]

- 6) Turn the No. 7 guide nut clockwise to flatten the waveform.
- 7) Turn the No. 8 guide nut clockwise to line the No. 8 guide up with the tape (lower it so that there is no curl just before the waveform starts to change).
- 8) If the radio frequency waveform is as shown in Fig. 4-12 on the exit side, repeat the adjustment.

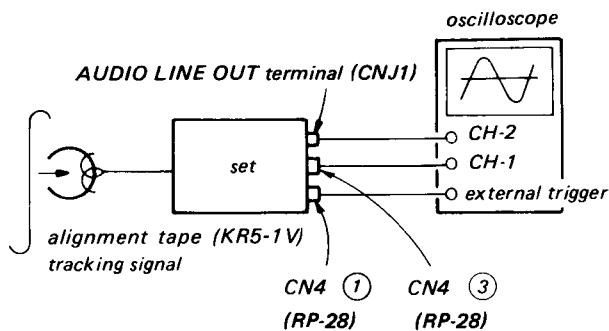


#### 4-2-2. CTL Head (AC Assembly) Position Adjustment

This adjustment includes the mechanical CTL head mounting position adjustment and the electrical tracking control center adjustment. The tracking control center adjustment is to be performed first, followed by the mechanical adjustment of the head mounting position.

##### [Connections]

- 1) Playback



##### [Method of adjustment]

- 1) Play the tracking signal section of the alignment tape.
- 2) Turn the tracking control knob clockwise or counterclockwise to the center click position. Confirm that the amplitude of the radio frequency output signal is at its maximum level. Also confirm that the audio signal 0 level position occurs at the location of the channel B waveform. If the necessary standards are not met follow the procedure in 3).

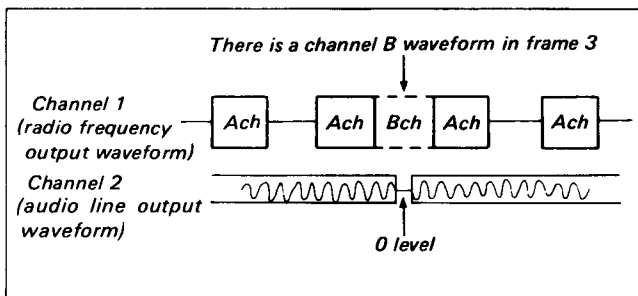


Fig. 4-14.

- 3) Tracking center adjustment  
Refer to electrical adjustment 2 in section 5-3-3.
- 4) CTL head position adjustment
  - a. Set the tracking control knob at the center click position.
  - b. Loosen the 2 AC assembly position adjustment screws, then use a tool such as an ordinary screwdriver to slide the AC assembly to where the radio frequency output waveform amplitude becomes a maximum.
  - c. Play the color bar signal on the alignment tape and check the picture quality.
  - d. Tighten the position adjustment screws, then lock them.

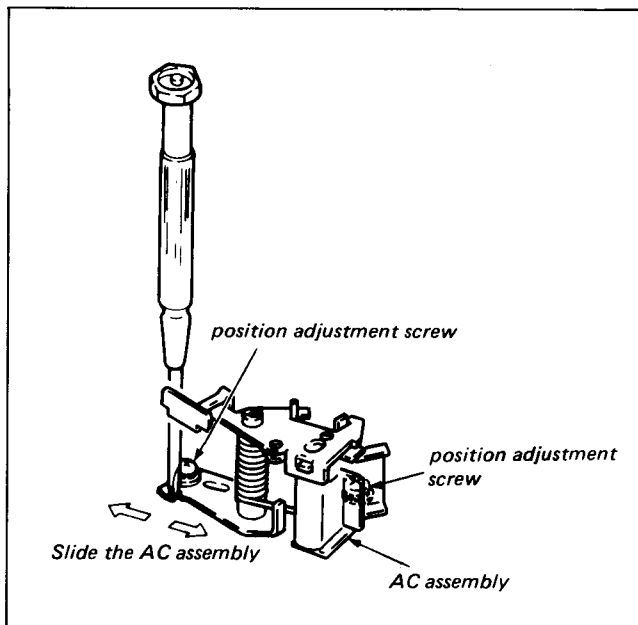
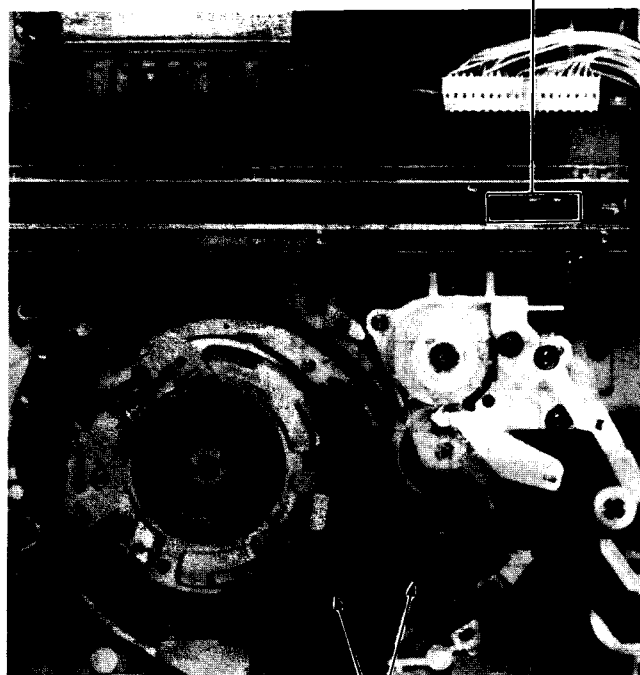
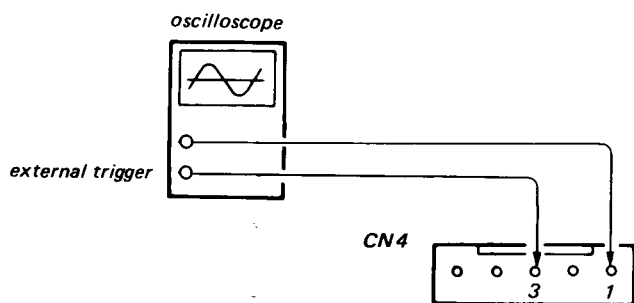


Fig. 4-15.

##### [Adjustment point]

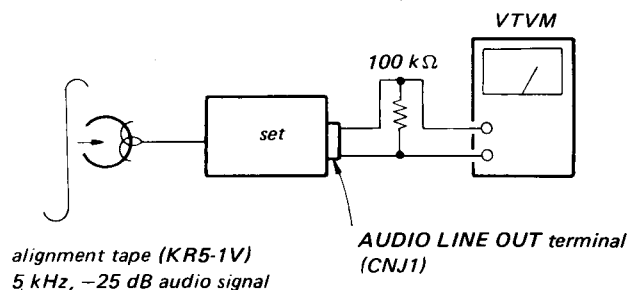


CTL head position adjustment screws

### 4-2-3. Audio head (AC Assembly) Azimuth Adjustment

#### [Connections]

- 1) Playback



#### [Method of adjustment]

- 1) Play the 5kHz, -25dB audio signal section (RF sweep section) of the alignment tape.
- 2) Adjust the azimuth adjustment screw until the output level (VTVM indication) is a maximum.

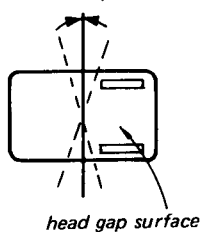
#### Note:

Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

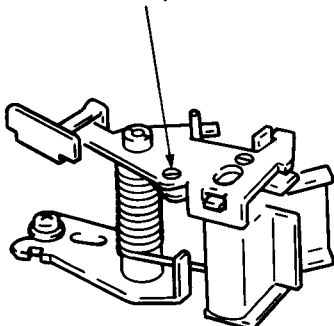
- 3) After adjustment, lock the adjustment screw.

#### [Adjustment point]

azimuth adjustment



azimuth adjustment



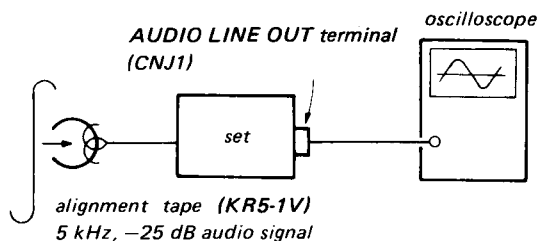
### 4-2-4. Audio Head (AC Assembly) Height Adjustment

#### [Condition]

This adjustment must only be performed after the exit side tracking adjustment has been completed.

#### [Connections]

- 1) Playback



#### [Method of adjustment]

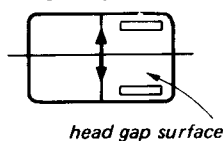
- 1) Play the 5kHz, -25dB audio signal section (RF sweep section) of the alignment tape.
- 2) Adjust the height adjustment screw and the tilt adjustment screw so that the amplitude of the audio line output waveform (5 kHz) becomes a maximum.

#### Note:

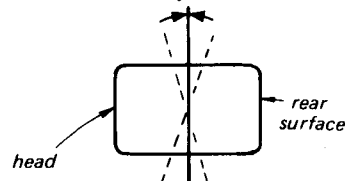
Both of these adjustment screws must be turned in the same direction and through the same angle, and not more than  $\pm 30^\circ$ . Complete the adjustment by turning the adjustment screws in the direction of tightening (clockwise).

#### [Adjustment point]

height adjustment

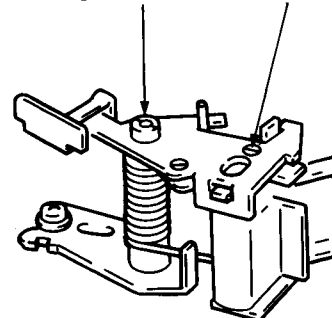


tilt adjustment



height adjustment

tilt adjustment



### 4-3. HOW TO INSPECT THE TAPE TRAVELING WHEN ADJUSTING THE TAPE PATH

Adjust and check the tape path using the alignment tape following the adjustment guide, then check the tape travel using the procedure below.

- 1) Get one L-830 reel ready (these are widely available commercially). Remove the cassette cover referring to Fig. 4-1 of the adjustment guide.
- 2) Run the L-830 tape in playback mode and check the following points.
  - i) Entrance side  
Confirm that the tape does not contact the upper flange of the No. 4 guide or the No. 6 guide, and is not damaged. (Some tape curl is allowed but the tape must not be creased.) (Fig. 4-16)
  - ii) Exit side  
Confirm that the tape does not contact the upper flange of the No. 7 guide or the No. 8 guide, or the upper or lower flange of the No. 10 guide, and is not scratched. (Some tape curl is allowed but the tape must not be creased.) (Fig. 4-17)
  - iii) If the tape was found to not be running correctly in step ii), readjust the tape path using the alignment tape, following the adjustment guide.  
If the tape is not running correctly on the entrance side, refer to section 4-1-2 of the adjustment guide.  
If the tape is not running correctly on the exit side, refer to section 4-1-3 of the adjustment guide.

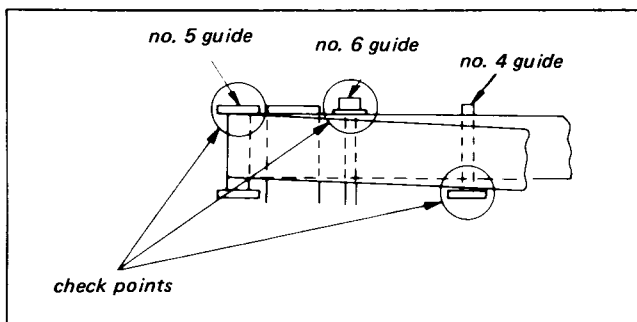


Fig. 4-16

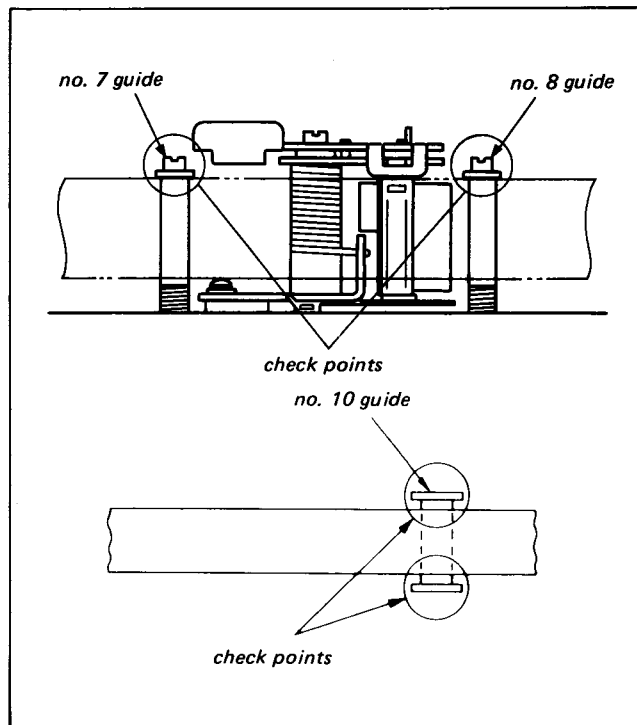


Fig. 4-17.

## 5. ELECTRICAL ALIGNMENT

This section provides all necessary information and instructions for complete alignment of the electronic circuits in this machine.

### EQUIPMENT REQUIRED

- (1) Color TV receiver
- (2) Oscilloscope Dual-trace, Bandwidth more than 15 MHz with delay mode
- (3) Frequency counter (more than four digits)
- (4) NTSC pattern generator
- (5) Digital voltmeter (10M $\Omega$ /V)
- (6) VOM (20k $\Omega$ /V)
- (7) Audio generator
- (8) Level meter
- (9) Distortion meter
- (10) Spectrum analyzer
- (11) Alignment tape Type KR5-1V Code No. 8-969-995-92
- (12) Alignment tool (adjusting screwdriver for semi-fixed resistor coil) Code No. 7-700-733-01

### [Preparatory Set-up for Alignment]

For these alignment procedures involving use of a video input signal the NTSC pattern generator is to be connected to the VHF antenna terminals of the SL-HF400. This RF signal is processed by the tuner and I.F. circuits within the VTR. It is important that the video out signal from the I.F. circuit satisfies the specifications. The video signal must be checked with an oscilloscope connected to pin 8 of IC601 on the VI-11 board. Check that the video signals are flat when the amplitude of the horizontal sync signal is about 0.3V, the amplitude of the video portion is about 0.7V, and the amplitude of the burst signal is about 0.3V.

The video signal (color-bar signal) used in this alignment is shown in Fig. 5-1.

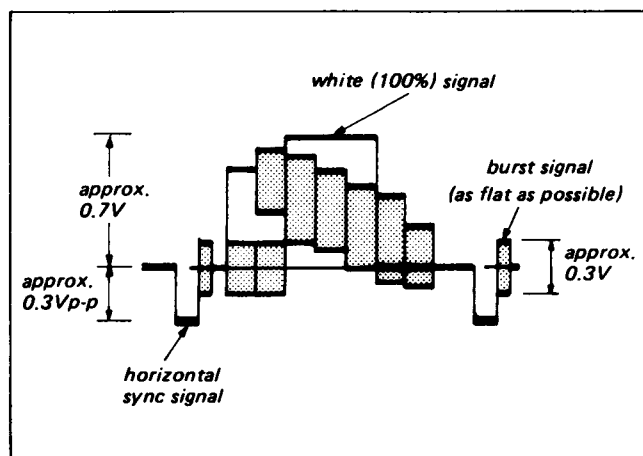


Fig. 5-1. Color-bar signal of pattern generator

### [Alignment Tape]

#### KR5-1V

| Tape speed         | Video signal | Audio signal                | Playing time            |
|--------------------|--------------|-----------------------------|-------------------------|
| 20.0mm/sec. (βII)  | Color bars   | 3 kHz -5dB                  | 4 min. for each segment |
|                    | Monoscope    | 333Hz -30 dB                |                         |
|                    | RF sweep     | 5kHz -30dB                  |                         |
|                    | Tracking     | 1kHz -10 dB                 |                         |
|                    | Color bars   | Beta hifi 400 Hz ±25kHz DEV |                         |
| 13.3mm/sec. (βIII) | Monoscope    | 5 kHz -30dB                 |                         |
|                    | Color bars   | 3 kHz -10dB                 |                         |

### [Color Bar Signal]

The 75% color bar signal recorded on the alignment tape is shown in Fig. 5-2.

**Note:** Measure at IC601 ⑧ on the VI-11 board.

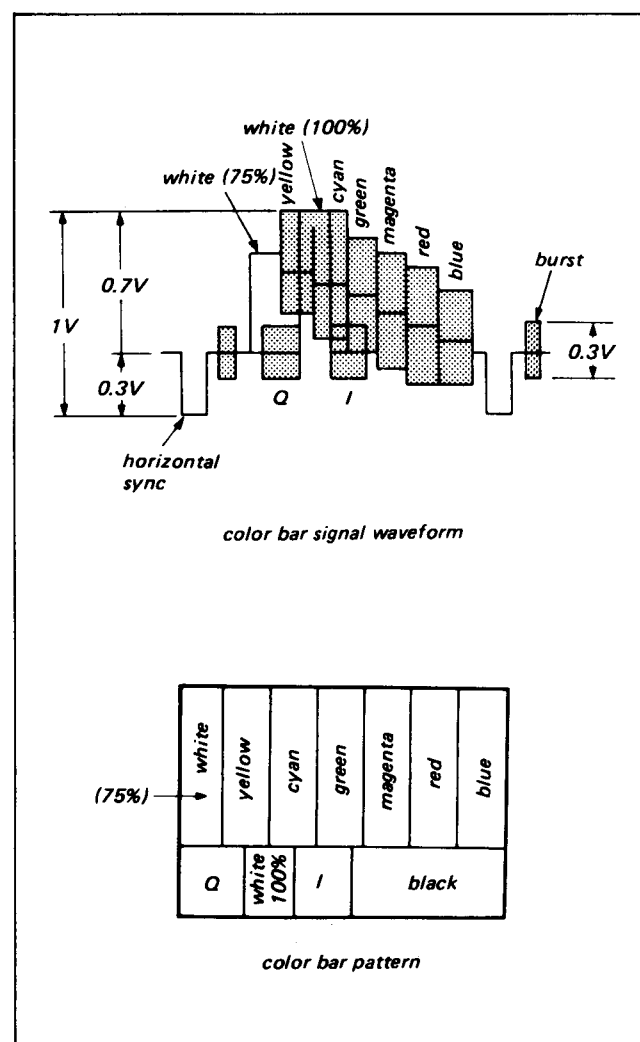


Fig. 5-2. Color-bar signal of alignment tape

### [VR Alignment Tool Screwdriver]

Use the tool screwdriver supplied for alignment of semi-fixed VRs and inductances on each printed circuit board. An ordinary screwdriver is too large and is difficult to use when adjusting VRs from the print pattern side of a board. The special alignment tool screwdriver is shown in Fig. 5-3.

The metal blade of the screwdriver is used for variable resistors and trimmer capacitors.

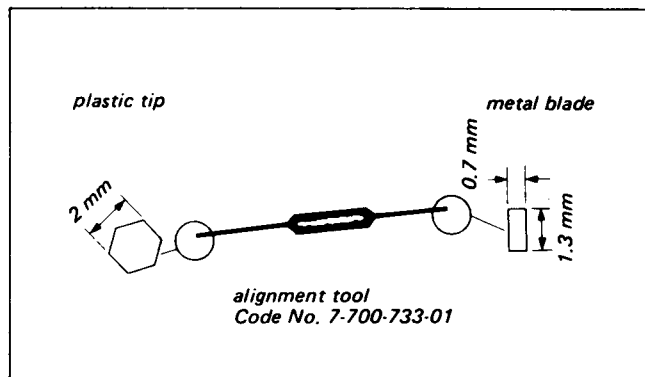


Fig. 5-3. Alignment tool screwdriver

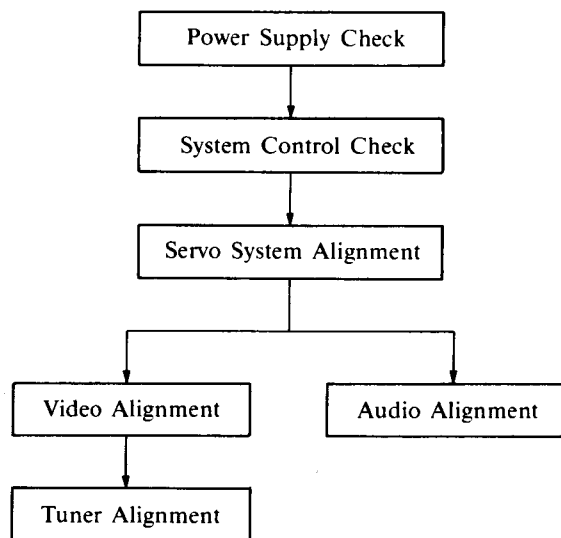
### [Required Levels and Impedances of Input and Output]

#### Inputs and outputs

|              |                                                                                |
|--------------|--------------------------------------------------------------------------------|
| Video input  | Phono jack (1)<br>1 Vp-p $\pm 0.5$ Vp-p, 75 ohms, unbalanced,<br>sync negative |
| Video output | Phono jack (1)<br>1 Vp-p $\pm 0.5$ Vp-p, 75 ohms, unbalanced,<br>sync negative |
| Audio input  | Phono jacks (2)<br>-10 dBs (0 dBs = 0.775V rms),<br>more than 47 k ohms        |
| Audio output | Phono jacks (2)<br>-10 dBs (at load impedance 47k ohms)<br>More than 10k ohms  |

### [Alignment Sequence]

The alignment should be performed following the sequence below.



### 5-1. POWER SUPPLY CHECK (PS-39 Board)

Measure in E-E mode (power supply switch ON).

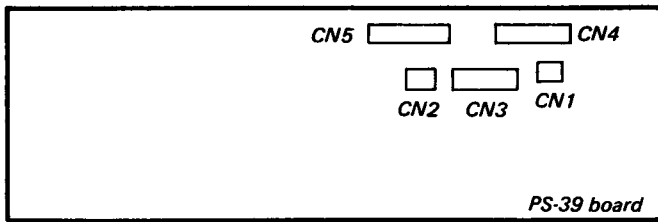


Fig. 5-4. Component layout

1. Switched 12V Check  
Pin 7 of CN4 shall be  $12.0 \pm 0.3V$ .
2. Switched 9 V Check  
Pin 5 of CN4 shall be  $9.0 \pm 0.2V$ .
3. Unswitched 5.5V Check  
Pin 3 of CN4 shall be  $5.5 \pm 0.2V$ .
4. Unswitched 45V Check  
Pin 5 of CN3 shall be  $45 \pm 5V$ .
5. Unswitched -20V Check  
Pin 5 of CN5 shall be  $-20 \pm 3V$ .
6. Unswitched -30 V Check  
Pin 2 of CN4 shall be  $-30 \pm 2.8V$ .
7. AC 4.2 V Check  
Pin 7, 8 of CN5 shall be  $AC4.2 \pm 0.3V$ .

### 5-2. SYSTEM CONTROL CHECK (SS-32 Board)

#### 5-2-1. Clock Frequency Check

Mode: E-E

Signal: None

Frequency counter: Pin 59 of IC1

Check: Within  $6.0 \text{ MHz} \pm 0.1 \text{ MHz}$

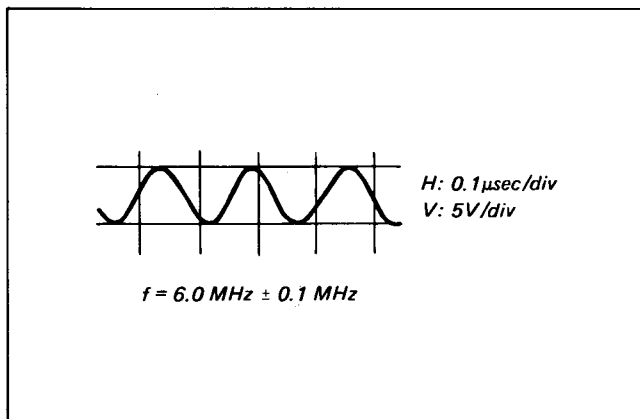


Fig. 5-5. Clock frequency

### 5-3. SERVO SYSTEM ALIGNMENT

#### Alignment Sequence

- 5-3-1. Reel motor control system adjustment
- 5-3-2. Drum servo system alignment
- 5-3-3. Capstan servo system alignment

#### 5-3-1. Reel Motor Control System Alignment

##### 1. FWD Torque Alignment (SS-32 board)

See "Mechanical Adjustment"

#### 5-3-2. Drum Servo System Alignment

##### 1. Voltage Check

- (1) Pin 30 of IC501 shall be  $5.7 \pm 0.3V$
- (2) Pin 10 of IC501 shall be  $3.4 \pm 0.3V$

##### 2. Clock Check

- (1) Pin 28 of IC501 shall be above  $0.3 \text{ Vp-p}$

##### 3. Drum Free Speed Adjustment (SS-32 board)

Mode: Playback

Signal: Alignment tape  $\beta$ II color bar, or monoscope

Oscilloscope: CH-1 Pin 13 of IC501 (TP501)

CH-2 Pin 39 of IC501 (TP505)

Alignment method:

Adjust to  $547 \mu\text{sec}$  with RV503 (See Fig. 5-6)

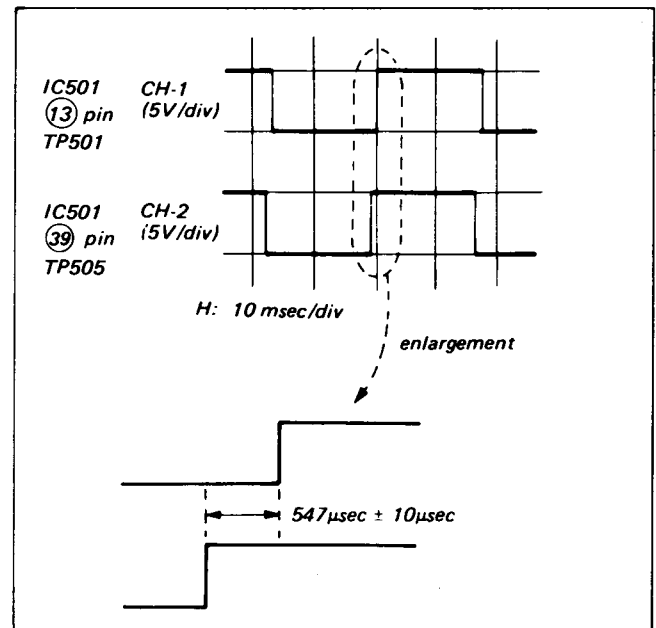


Fig. 5-6. Drum free speed adjustment

#### 4. RF Switching Position Adjustment (SS-32 board)

Mode: Playback

Signal: Alignment tape  $\beta$ II color bar or monoscope

Oscilloscope: CH-1 TP505 (pin 39 of IC501)

CH-2 Pin 40 of IC501

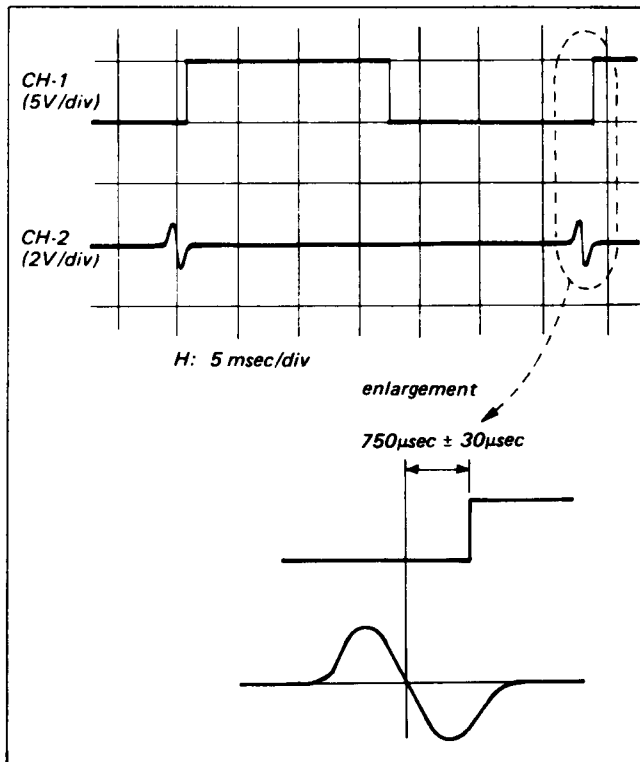


Fig. 5-7. RF switching position adjustment (1)

Adjustment method:

- (1) Adjust to  $750 \mu\text{sec} \pm 30 \mu\text{sec}$  with RV502. (See Fig. 5-7)
- (2) Change connection of CH-2 only to pin 40 of IC501.
- (3) Mode: Recording
- (4) Confirm that the Lock Phase of RF SW P (BCH) is 6.5H.
- (5) Adjust RV501 so that the Lock Phase of RF SW P (ACH) is 6.5H. (See Fig. 5-8)

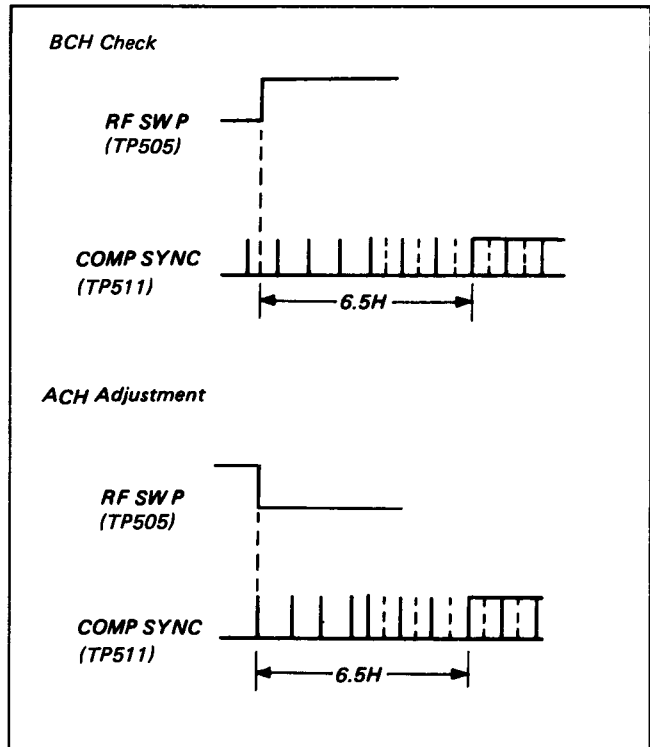


Fig. 5-8. RF switching position adjustment

#### 5. BETA Scan, Drum Free Speed Adjustment (SS-32 board)

Mode: BETA scan

Signal: Alignment tape  $\beta$ III color bar or monoscope

Oscilloscope: TP511

Adjustment method:

Adjust to  $63.56 \mu\text{sec} \pm 0.2 \mu\text{sec}$  with RV507 (See Fig. 5-9).

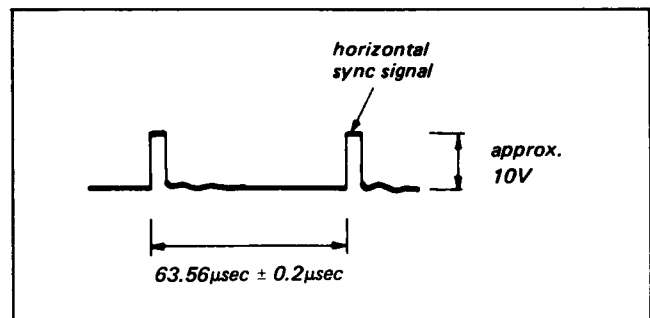


Fig. 5-9. Drum free speed adjustment



### 5-3-3. Capstan Servo System Alignment

#### 1. Capstan DC Bias Adjustment (SS-32 board)

Mode: Playback

Signal: Color bar from alignment tape  $\beta$ I,  $\beta$ II,  $\beta$ III or monoscope

Oscilloscope: Pin 20 of IC501 (TP504)

Adjustment method:

Adjust to the relevant duty (ratio for A and B) in the play mode with the RV as shown in Table 1.

| Playback Mode | Adjustment RV | Duty         |
|---------------|---------------|--------------|
| $\beta$ III   | RV504         | 50% $\pm$ 5% |
| $\beta$ II    | RV505         | 50% $\pm$ 5% |
| $\beta$ I     | RV506         | 50% $\pm$ 5% |

Table 5-1.

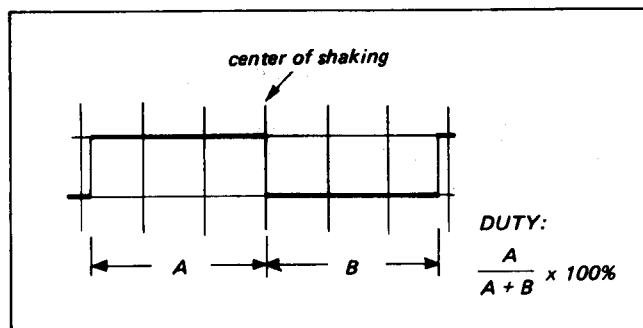


Fig. 5-10. Capstan DC bias adjustment

#### 2. Tracking Center Adjustment (SS-32 board)

Mode: Playback

Signal: Alignment tape  $\beta$ II or  $\beta$ III color bar or monoscope

Oscilloscope: CH-1 Pin 13 of IC501 (TP501)

CH-2 Pin 15 of IC501 (TP510)

Adjustment method:

- (1) Set the TRACKING knob to the center click position.
- (2) Adjust to 860  $\mu$ sec  $\pm$  50  $\mu$ sec with RV508. (See Fig. 5-11)

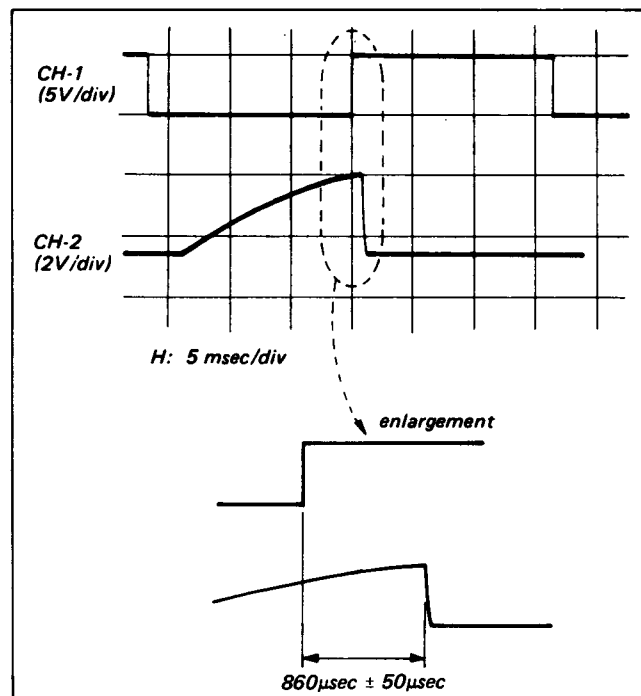


Fig. 5-11. Tracking center adjustment

## 5-4. VIDEO SYSTEM ALIGNMENT

As a rule, first the playback system is aligned with an alignment tape to check that it operates normally, then the recording system is aligned.

The alignment sequence is shown below. The Y signal and chroma signal systems are aligned for both playback and recording systems.

Color video signals supplied by the pattern generator is used for video system alignment in the record mode. Check that the sync and color burst signals conform to the specifications designated in "Preparatory Set-up for Alignment" in Fig. 5-1

### 5-4-1. [Playback system alignment]

1. Playback amplifier frequency response adjustment
2. De-emphasis level adjustment
3. Playback Y signal level adjustment

### 5-4-2. [Record system alignment]

1. VCO frequency alignment and VCO lock check
2. Comb filter adjustment
3. Comb AGC adjustment
4. Sync AGC adjustment
5. Y-FM carrier adjustment
6. FM modulator deviation adjustment
7. White clip and dark clip adjustment
8. Y-FM record current adjustment
9. fsc adjustment
10. Carrier balance adjustment
11. Chroma record current adjustment

### 5-4-3. [JOG motion playback system alignment]

1. Skew frequency adjustment
2. JOG AGC adjustment

## 5-4-1. Playback System Alignment

### 1. Playback Amplifier Frequency Response Adjustment (RP-28 board)

- Adjust both A- and B-ch.
- B-ch is indicated by ( ).

Mode: Playback

Signal: Alignment tape II RF sweep

Oscilloscope: Pin 3 of CN4

External trigger: Pin 1 of CN4

Adjustment method:

- (1) Increase the output level to maximum with the TRACKING knob.
- (2) Set the trigger slope to - (+).
- (3) Adjust RV3 (RV2) on RP-28 board so that 5.1 MHz becomes 75% (-2 dB) against 3.58 MHz.

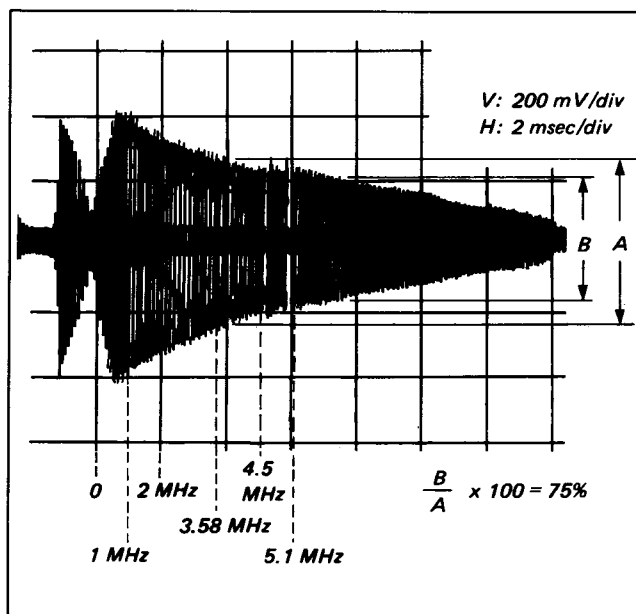


Fig. 5-12. Playback amplifier frequency response adjustment

### 2. De-emphasis Level Adjustment (VI-11 board)

Mode: Playback

Signal: Alignment tape  $\beta$ II color bar

Oscilloscope: Emitter of Q235

Adjustment method:

Adjust to  $1.3V \pm 0.05 V_{p-p}$  with RV231. (See Fig. 5-13)

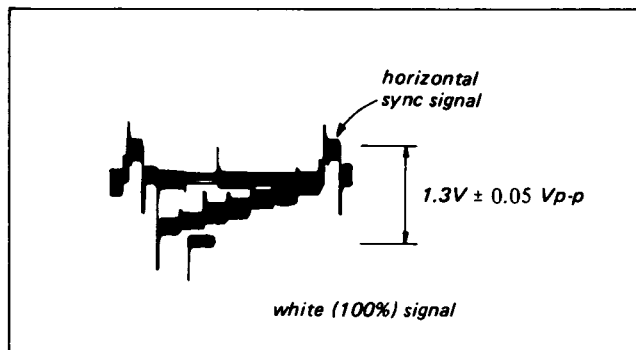


Fig. 5-13. De-emphasis level adjustment

### 3. Playback Y Signal Level Adjustment (VI-11 board)

Mode: Playback

Signal: Alignment tape  $\beta$ II color bar

Oscilloscope: Pin 3 of CN5

Adjustment method:

Adjust to  $1.0V \pm 0.05 V_{p-p}$  with RV230.

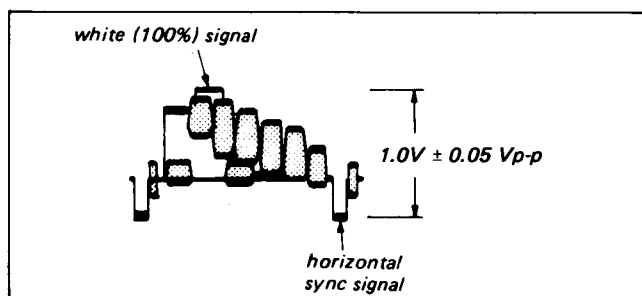


Fig. 5-14. Playback Y signal level adjustment

### 5-4-2. Record System Alignment

#### 1. VCO Frequency Alignment and VCO Lock Check (VI-11 board)

Mode: Record or E-E

Signal: Color bar

Frequency counter: Pin 33 of IC401

Digital Voltmeter: Pin 26 of IC401

Adjustment method:

Adjust to  $4.4V \pm 0.05 V_{dc}$  with RV403.

**Note:** The frequency also changes when RV403 is turned.

Verify that the frequency is locked to  $f = 4.27 \text{ MHz}$ .

Be sure to use digital voltmeter to measure voltage.

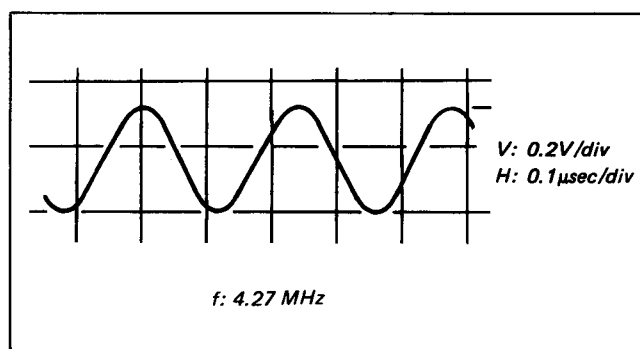


Fig. 5-15. VCO frequency alignment and VCO lock check

#### 2. Comb Filter Adjustment (VI-11 board)

Mode: Record or E-E

Signal: Color bar

Oscilloscope: Pin 42 of IC101

Adjustment method:

Minimize the residual chroma component by alternately adjusting RV101 and LV101. (See Fig. 5-16)

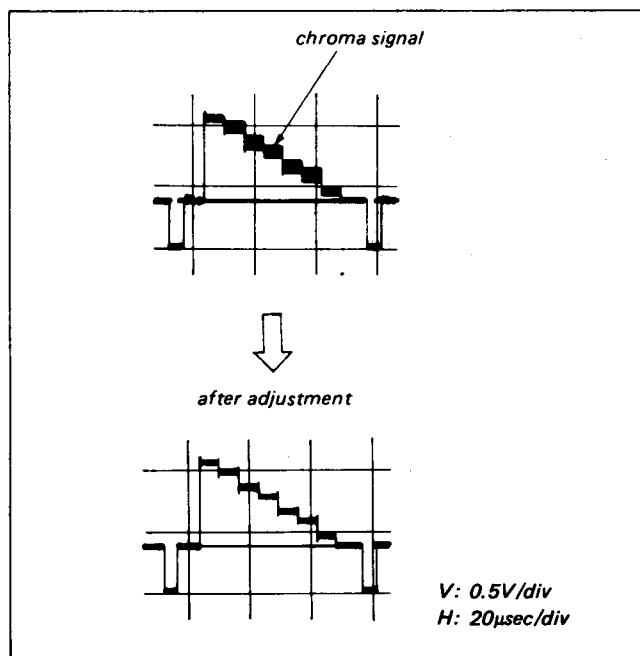


Fig. 5-16. Comb filter adjustment

### 3. Comb AGC Adjustment (VI-11 board)

Mode: Playback

Signal: Monoscope or prerecorded tape

Oscilloscope: Pin 3 of CN5

Adjustment method:

Adjust with RV301 so that the dropout corrected portion level is the same as the value before dropout.

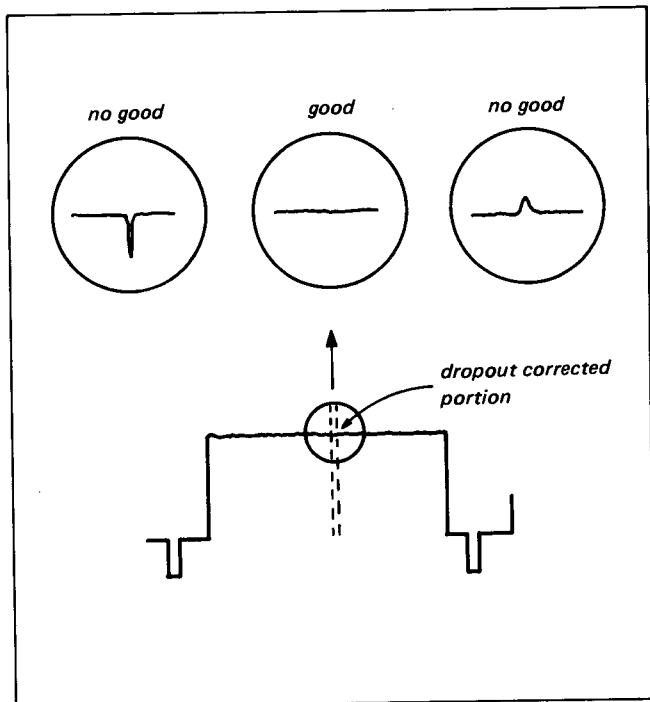


Fig. 5-17.

### 4. Sync AGC Adjustment (VI-11 board)

Mode: Record or E-E

Signal: Color Bar

Oscilloscope: Pin 3 of CN5

Adjustment method:

Adjust to  $1.0V \pm 0.05 V_{p-p}$  with RV102. (See Fig. 5-18)

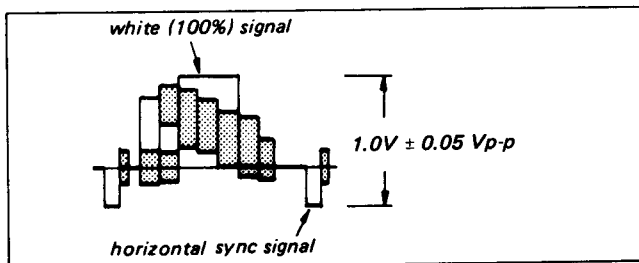


Fig. 5-18. Sync AGC adjustment

### 5. Y-FM Carrier Adjustment (VI-11 board)

Mode: Record or E-E

Signal: None

Frequency counter: Pin 1 of CN2

Adjustment method

- (1) Set to Super-Beta recording mode  
(BETA Hi-Fi selector switch: ON)  
(SUPER-BETA switch: ON)
- (2) Adjust to  $4.4 MHz \pm 0.05 MHz$  with RV201 (See Fig. 5-19)

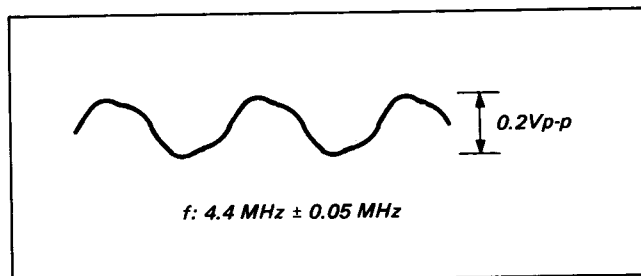


Fig. 5-19.

### 6. FM Modulator Deviation Adjustment (VI-11 board)

Mode: Record or E-E

Signal: Color bar

Spectrum analyzer: Pin 1 of CN2

Adjustment method:

- (1) Adjust the spacing between  $f_2$  and  $f_1$  to  $1.27 MHz \pm 0.05 MHz$  with RV202. (See Fig. 5-20)
- (2) Adjust according to step 5 and 6 (1) repeatedly so that Y signal carrier and deviation adjustments are both satisfied.

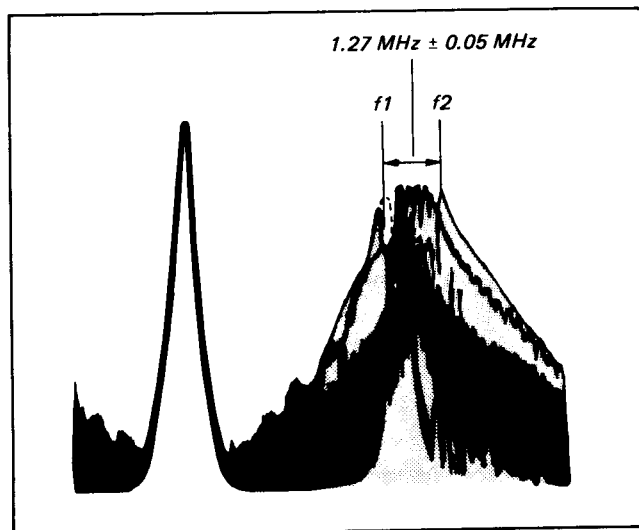


Fig. 5-20. FM Modulator Deviation Adjustment

## 7. Dark Clip Adjustment (VI-11 board)

Mode: BETA Hi-Fi recording mode and Super-Beta mode

Signal: None

Digital voltmeter: See Fig. 5-21

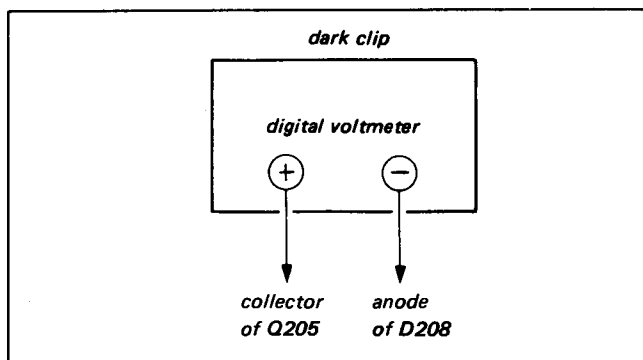


Fig. 5-21. Connection

Adjusting dark clip: Adjust to  $0V \pm 0.05V$  potential difference with RV203.

## 8. Y-FM Record Current Adjustment

(RP-28 board)

Mode: Record (BETA Hi-Fi selector switch: ON)  
(SUPER-BETA switch: ON)

Signal: None

Oscilloscope: Pin 1 of CN2 on RP-28 board

Adjustment method:

Adjust RV701 on VI-11 board to obtain the level listed below. (See Fig. 5-22)

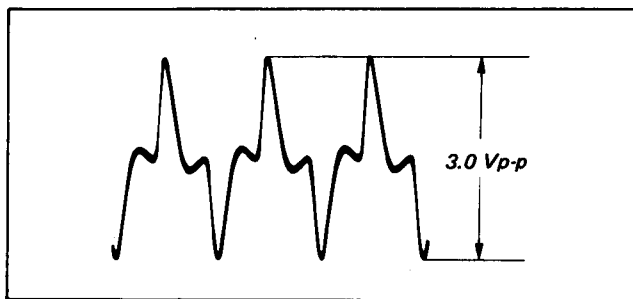


Fig. 5-22. Y-FM record current adjustment

## 9. fsc Adjustment (VI-11 board)

Mode: Playback

Signal: Color bar

Frequency counter: Pin 3 of CN3

Adjustment method:

- (1) Set to playback mode.
- (2) Adjust to  $3.579545 \text{ Hz} \pm 10 \text{ Hz}$  with RV404

## 10. Carrier Balance Adjustment (VI-11 board)

Mode: Playback

Signal: Alignment tape  $\beta$ II color bar

Spectrum analyzer: Pin 39 of IC401

Adjustment method:

Adjust 4.27MHz component with RV402 to a level lower than the 3.58 MHz component by  $-30\text{dB}$ . (See Fig. 5-23)

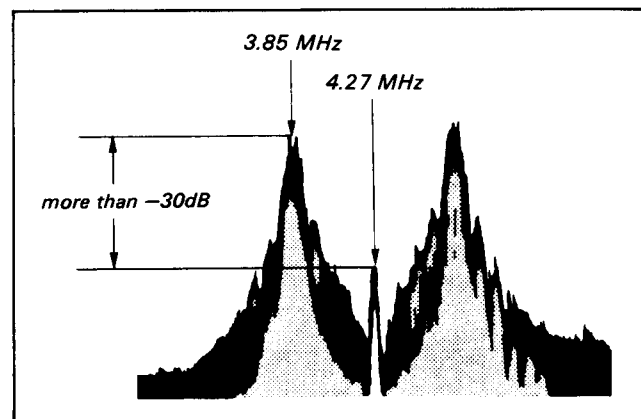


Fig. 5-23. Carrier balance adjustment

## 11. Chroma Record Current Adjustment (VI-11 board)

Mode: Record

Signal: Color bar

Oscilloscope: Emitter of Q405

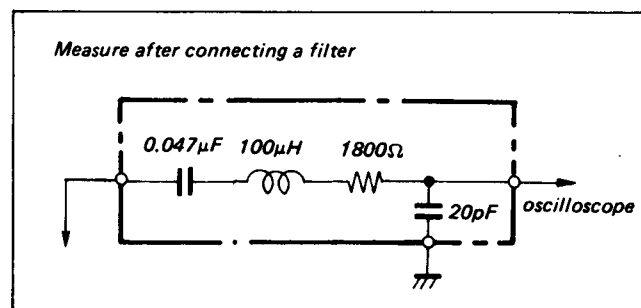


Fig. 5-24.

Adjustment method:

Adjust the level of the color bar "cyan" to  $130 \text{ mV} \pm 10 \text{ mVp-p}$  with RV401. (See Fig. 5-25)

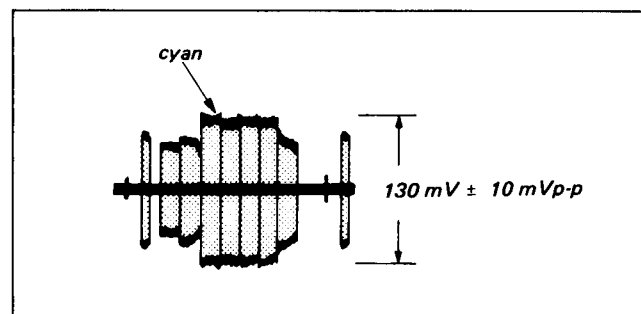


Fig. 5-25. Chroma record current adjustment

### 5-4-3. JOG Motion Playback System Alignment

#### 1. Skew Frequency Adjustment (VI-11 board)

Mode: Playback + Pause

Signal: Alignment tape  $\beta$ II color bar

Adjustment method:

Adjust RV504 to remove skew.

#### 2. JOG AGC Adjustment (VI-11 board)

Mode: Playback + Pause

Signal: Alignment tape  $\beta$ II or  $\beta$ III color bar

Oscilloscope: Pin 3 of CN5

Adjustment method:

Set for identical output levels during both playback and pause with RV502 and RV503.

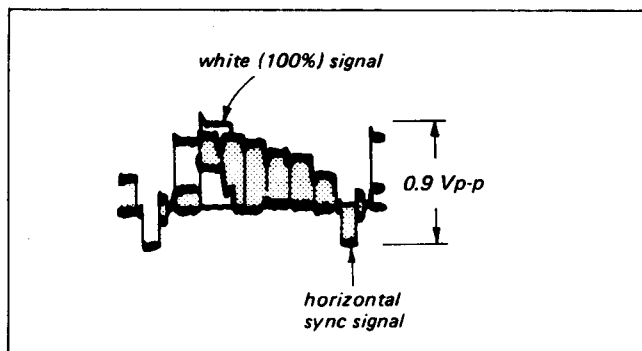


Fig. 5-26. Slow AGC adjustment

### 5-5. AUDIO SYSTEM ADJUSTMENT (AU-8 board)

Adjustments of the audio system shall be made in the  $\beta$ III mode, otherwise note. Use a Dynamicon tape for adjustments.

#### [Connection of Related Equipment]

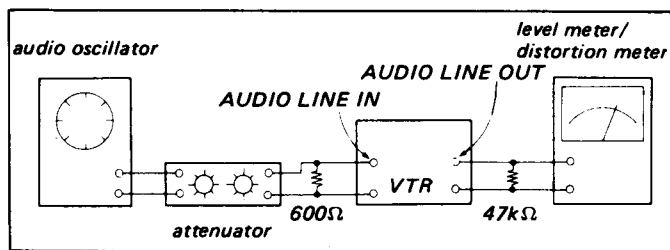


Fig. 5-27.

#### [Adjustment Sequence]

1. AC head adjustment . . . . See "Mechanical Adjustment"
2. Playback frequency characteristic adjustment
3. Playback output level adjustment
4. E-E output level check
5. Bias oscillator and bias trap check
6. Record bias adjustment
7. Overall frequency characteristic check
8. Overall S/N check
9. Overall distortion check
10. BETA Hi-Fi recording carrier wave level check
11. Dynamic emphasis decoder gain and playback L-ch (R-ch) check
12. BETA Hi-Fi deviation check

#### 5-5-1. AC Head Adjustment

Refer to "Mechanical Adjustment"

#### 5-5-2. Playback Frequency Characteristic Check

Mode: playback

Signal: Alignment tape (Note:  $\beta$ II)

BETA Hi-Fi selector switch: OFF

Playback 333Hz and 7 kHz from the alignment tape and confirm that the level difference between 333Hz and 7 kHz  $0dB \pm 3dB$ .

#### 5-5-3. Playback Output Level Adjustment

Mode: playback

Signal: Alignment tape (Note:  $\beta$ II)

BETA Hi-Fi selector switch: OFF

Playback 333Hz from the alignment tape and adjust so that the output level is  $-30 dB \pm 0.5 dB$  with RV901.

#### 5-5-4. E-E Output Level Check

BETA Hi-Fi selector switch: OFF

- (1) Input a 333Hz,  $-30 dB$ s signal on L-CH and R-CH simultaneously so audio line input.
- (2) Confirm that the audio line output level is  $-27 dB \pm 3 dB$ s.

#### 5-5-5. Bias Oscillator Frequency and Bias Trap Check

Input is "AUDIO LINE IN", inputs pins for both L-CH and R-CH are shorted.

- (1) Input is no-signal, in recording mode.
- (2) Bring the oscilloscope probe close to T900 inside the shield case, via the frequency counter. Confirm that the oscillation frequency is 65 kHz  $\pm$  6.5 kHz. (See Fig. 5-28)
- (3) Connect the oscilloscope to IC900 pin ① and confirm that bias leak is 340 mV  $\pm$  100 mV.

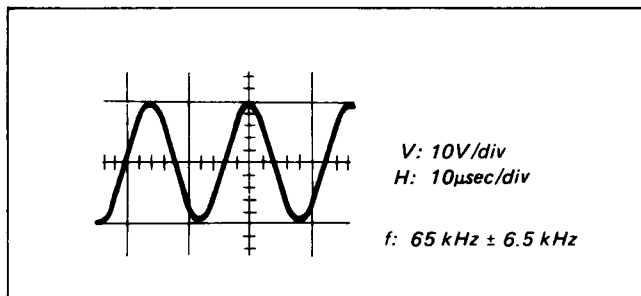


Fig. 5-28. Bias oscillator check

#### 5-5-6. Record Bias Adjustment

Tape path adjustment should be completed so that the 7 kHz playback level satisfies the specifications in  $\beta$ III mode.

- (1) Supply a 333Hz signal.
- (2) Terminate the audio line output pin with a 47 k $\Omega$  resistor and connect a level meter.
- (3) Turn the attenuator and adjust the input signal so that the level meter indication is -30 dBs.
- (4) Set to  $\beta$ III recording mode.
- (5) Record in this state for 20 seconds.
- (6) Supply a 7 kHz signal, and record for 10 seconds.
- (7) Playback the recorded section of the tape and check that the output level at 333Hz and 7 kHz. (The level is not read for the first 11 seconds of the 333Hz playback signal.)
- (8) Confirm that the output level at 7 kHz is 0 dB  $\pm$  2 dB relative to the output level at 333Hz.
- (9) When the specifications are not met, adjust RV902 and repeat items (1)~(8).

#### 5-5-7. Overall Frequency Characteristic Check

(Note:  $\beta$ III)

BETA Hi-Fi selector switch: OFF

REC LEVEL control: MAN.

- (1) Connect a 333Hz signal
- (2) Set up the E-E mode and adjust the oscillator output level so that the level meter reading is -30 dB.
- (3) Record signals.
- (4) Change the frequency to 50Hz, 100Hz, 333Hz, 7kHz, and 10kHz and repeat Steps (2) and (3).
- (5) Playback the recorded section of the tape and verify that the level is within the specification. (See Fig. 5-29)

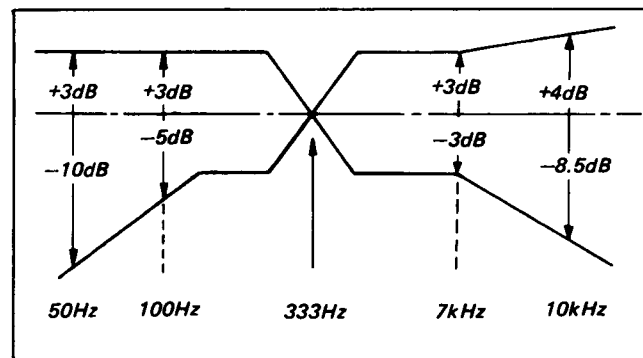


Fig. 5-29.

- (6) Turn the BETA Hi-Fi selector switch to ON, the MPX FILTER and PCM selector switches to OFF, and apply a 400 Hz signal to audio line input pin.
- (7) Set up the E-E mode and adjust the oscillator output level so that the level meter reading is -20 dB.
- (8) Record signals.
- (9) Change the frequency to 20Hz, 100Hz, 400Hz, 10kHz and 20kHz and repeat Steps (7) and (8).
- (10) Playback the recorded section of the tape and verify that the level is within the specification. (See Fig. 5-30)
- (11) Turn the MPX FILTER and PCM selector switches on, and repeat item (7) with input signal frequency of 16 kHz.
- (12) Confirm that the output level at 16kHz is -20 dB or less relative to the output level at 400Hz.

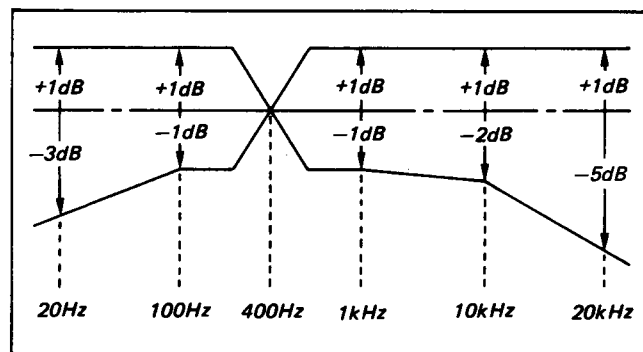


Fig. 5-30.

#### 5-5-8. Overall S/N Check (Note: $\beta$ II)

BETA Hi-Fi selector switch: OFF

MONITOR SELECT switch: STEREO

- (1) Apply a 333Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is  $-10$  dB.
- (2) Record signals.
- (3) Switch to no-signal input while continuing in record mode. (Ground input for both L-CH and R-CH.)
- (4) Playback the recorded portion, and confirm that the level difference between the 333Hz signal and no-signal portion (the portion immediately after the 333Hz signal) is more than 33 dB.

#### 5-5-9. Overall S/N Check (BETA Hi-Fi mode)

(Note:  $\beta$ II)

BETA Hi-Fi selector switch: OFF

MONITOR SELECT switch: STEREO

- (1) Terminate the audio line output pin with a 47 k $\Omega$  resistor and connect a level meter.
- (2) Apply a 400Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is  $-10$  dB.
- (3) Record signals.
- (4) Switch to no-signal input while continuing in record mode. (Ground input for both L-CH and R-CH.)
- (5) Playback the recorded portion, and confirm that the level difference between the 400Hz signal and no-signal portion (the portion immediately after the 400Hz signal) is more than 65 dB.

#### 5-5-10. Overall Distortion Check (Note: $\beta$ III)

BETA Hi-Fi selector switch: OFF

MONITOR SELECT switch: STEREO

- (1) Apply a 333Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is  $-10$  dB.
- (2) Record signals.
- (3) Playback the recorded section of the tape and verify that the distortion is below 4%.

#### 5-5-11. Overall Distortion Check (BETA Hi-Fi mode)

(Note:  $\beta$ II)

BETA Hi-Fi selector switch: OFF

MONITOR SELECT switch: STEREO

- (1) Apply a 400Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is  $-10$  dB.
- (2) Record signals.
- (3) Playback the recorded section of the tape and verify that the distortion is below 0.5%.

#### 5-5-12. BETA Hi-Fi Recording Carrier Wave Level Check

Mode: Record (BETA Hi-Fi selector switch: ON)

Signal: None

- (1) Carrier wave 1 (1.38 MHz) level check
  1. Connect the oscilloscope to pin 39 of IC3.
  2. Confirm that peak value is  $0.8 V_{p-p} \pm 0.1 V_{p-p}$ .
- (2) Carrier wave 2 (1.68 MHz) level check
  1. Connect the oscilloscope pin 11 of IC3.
  2. Confirm that peak value is  $180 mV_{p-p} \pm 20 mV_{p-p}$ .
- (3) Carrier wave 3 (1.53 MHz) level check
  1. Connect the oscilloscope pin 36 of IC3.
  2. Confirm that peak value is  $180 mV_{p-p} \pm 20 mV_{p-p}$ .
- (4) Carrier wave 4 (1.83 MHz) level check
  1. Connect the oscilloscope to pin 9 of IC3.
  2. Confirm that peak value is  $180 mV_{p-p} \pm 20 mV_{p-p}$ .

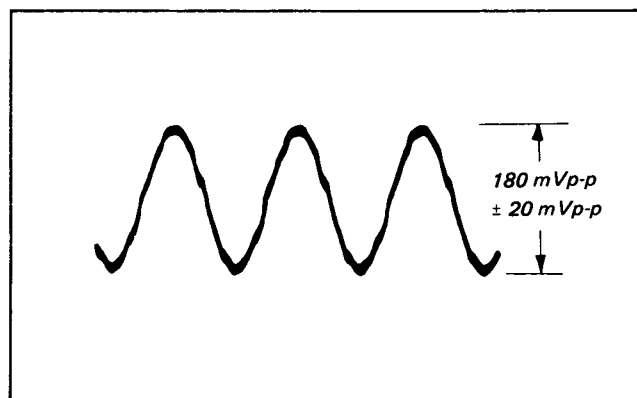


Fig. 5-31. Recording carrier wave level adjustment

#### \* Interchangeability Check

Low level noise should not be noticeably large on a commercially sold soft tape BETA Hi-Fi signal portion.

#### 5-5-13. Dynamic Emphasis Decoder Gain and Playback L-CH (R-CH) Check

- (1) Playback alignment tape in the BETA Hi-Fi mode.
- (2) Confirm that the level meter to pin 8 of FL101 (2/2) (FL101 (1/2)) becomes  $-20$  dB  $\pm 0.3$  dB.
- (3) Connect the level meter to pin 1 of IC602 and pin 7 of IC602
- (4) BETA Hi-Fi mode and confirm that level meter is  $-14$  dB  $\pm 0.5$  dB.



### 5-5-14. BETA Hi-Fi Deviation Check

BETA Hi-Fi selector switch: ON

- (1) Terminate the audio line output pin with a  $47k\Omega$  resistor and connect a level meter.
- (2) Apply a 400Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is  $-10$  dB.
- (3) Confirm that E-E mode audio line output and output when self-recording is played back are the same.

### 5-6. TUNER SYSTEM ADJUSTMENT (TU-77, MP-7 board)

#### 1. AFT Adjustment (TU-77 board)

- (1) Receive a TV broadcast signal.
- (2) Turn the AFT switch off.
- (3) Press the tuning button and set for the optimum state while observing the monitor TV screen.  
(There should be no beat.)
- (4) Connect the digital voltmeter to pin ⑦ of IC101.
- (5) Adjust T103 so that the level is 4.6 V DC.
- (6) Turn the AFT switch on, receive each channel, and check to make sure that there is no beat or picture disturbance.

#### 2. RF AGC Adjustment (TU-77 board)

- (1) Adjust the monitor TV for best contrast and receive a VHF TV broadcast signal.
- (2) Adjust RV101 so that snow noise is visible.
- (3) Turn RV101 in the opposite direction to that in (2) and set at the point where snow noise disappears.
- (4) Receive each channel and confirm that there is no beat, picture disturbance or snow noise.
- (5) Adjust the monitor TV for best contrast and receive a UHF TV broadcast signal.
- (6) Adjust RV104 so that snow noise is visible.
- (7) Turn RV104 in the opposite direction to that in (2) and set at the point where snow noise disappears.
- (8) Receive each channel and confirm that there is no beat, picture disturbance or snow noise.

#### 3. Audio Carrier Lock SIF Adjustment (TU-77 board)

##### 3-1. VCO voltage adjustment

- (1) Short IC102 pin ⑨ and pin ⑩ across the shortest distance.
- (2) Connect a digital voltmeter to IC102 pin ④.
- (3) Adjust the  $2.7\text{ V} \pm 0.05\text{ V}$  DC with RV203.
- (4) Return IC102 pins ⑨ and ⑩ to normal.

##### 3-2. T206 adjustment

- (1) Receive a TV broadcast signal.
- (2) Connect a digital voltmeter to IC102 pin ④.
- (3) Adjust the  $2.7\text{ V} \pm 0.05\text{ V}$  DC with T206. Audio should be output normally at this time.

Note:

$2.7\text{ V}$  voltage is generated at several points, not just one, so find the point that varies between  $1\text{ V} - 4\text{ V}$ .

### 3-3. SIF discriminator adjustment

- (1) Receive a TV broadcast signal.
- (2) Connect a digital voltmeter to IC101 pin ⑬.
- (3) Adjust to  $3.9\text{ V} \pm 0.2\text{ V}$  DC with T101.

### 4. Multiplex Decoder Adjustment (MP-7 board)

When inputting a signal to IC801 pin ①, pull up C801 minus side with a  $470\Omega$  resistor to 9 V and cut DC.

#### 4-1. SAP-BPF adjustment

- (1) Input a 62.94 kHz 0.42 Vp-p sine wave to IC801 pin ①.
- (2) Adjust RV802 so that IC801 pin ⑥ output is minimum.
- (3) Set the frequency to 78.67 kHz and confirm that IC801 pin 37 output is less than 30 mVp-p.

#### 4-2. Stereo VCO adjustment

- (1) Short the IC801 pin ① to ground with a chemical capacitor.
- (2) Connect a frequency counter to IC801 pin ③② and adjust RV805 so that the frequency is  $62.94 \pm 0.1\text{ kHz}$ .

#### 4-3. SAP VCO adjustment

- (1) Select an illegal channel (channel 0, etc.) to make MUTE high and read IC801 pin ②⑤ DC voltage VM.
- (2) Input a 78.67 kHz 0.42 Vp-p to IC801 pin ① and adjust RV803 so that IC801 pin ②⑤ DC voltage is VM 480.1 V.

#### 4-4. Pilot cancel adjustment

- (1) Input a 15.75 kHz 0.14 Vp-p to IC801 pin ①.
- (2) Adjust RV804 so that IC801 pin 40 output 15.75 kHz output is minimum. (If it is turned too much, output will become zero and operation will be mono.)

#### 4-5. Output level check

Input a 300 Hz 0.7 Vp-p to IC801 pin ①. Check CN106 pin ① output VL and ② output VR.  $V_L = 400 \pm 40\text{ mVrms}$ .  
 $V_R = V_L \pm 25\text{ mVrms}$ .

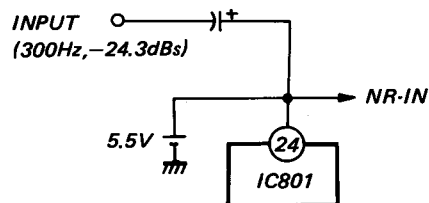
### 5. Noise Reduction Adjustment (MP-7 board)

#### 5-1. Time constant adjustment

Adjust RV830 so that the voltage drop at both sides of R839 is  $15 \pm 1\text{ mVp-p}$ .

#### 5-2. Variable de-emphasis adjustment

- (1) Set RV832 to mechanical center.
- (2) Apply 5.5 V bias to IC801 pin ②④, cut DC with a capacitor and input 300 Hz  $-24.3\text{ dBs}$ .



- (3) Adjust RV831 so that CN106 pin ① and ② output is  $V_L/7 \pm 5\text{ mV}$ , and read IC830 pin ⑦ output Va.
- (4) In the same way, input 8 kHz  $-17.2\text{ dBs}$  and adjust RV831 so that IC830 pin ⑦ output is  $V_a - 11.3\text{ dBs}$ .

## 6. Separation Check

### 6-1. Indicator check

Receive and MTS signal channel and check that the stereo indicator lights up. (AUTO STEREO SW should be ON)

### 6-2. Main level, L-R adjustment (MP-7 board)

Receive on MTS signal and adjust RV202 on TU-77 board and RV806 (L-R) so that separation is maximum.

(RV202 should be near MAX and RV806 near center)

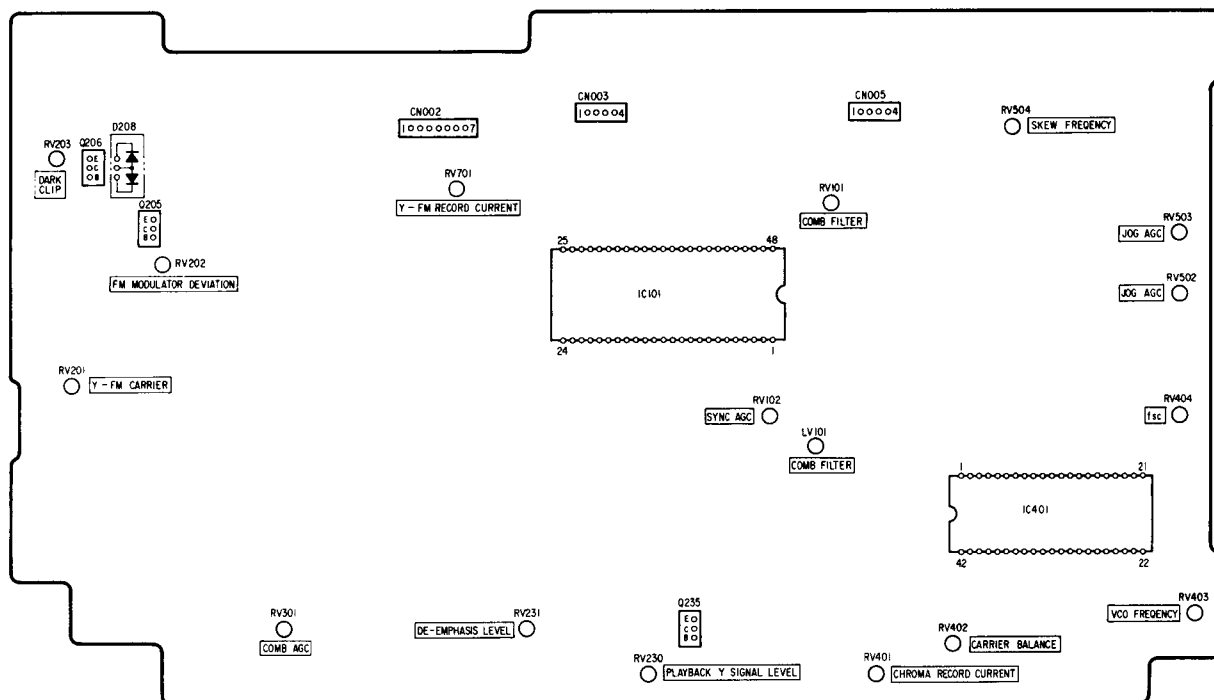
- 1 "H" for 12 seconds only when REC starts.
  - 2 "H" when there is no CTL.
  - 3 Depends on front panel  $\beta$  switch.
  - 4 Outputs Beta mode set the time before.
  - 5 Outputs Beta mode of the tape currently being played back.
  - 6  $\beta$ I: "L",  $\beta$ II: "L" only when tape moves,  $\beta$ III: "H".
  - 7 (RF SWP) when tape is stopped, "L" when tape is moving
- Refer to Timing  
Chart

## 7. Video Modulation Adjustment (TU-77 board)

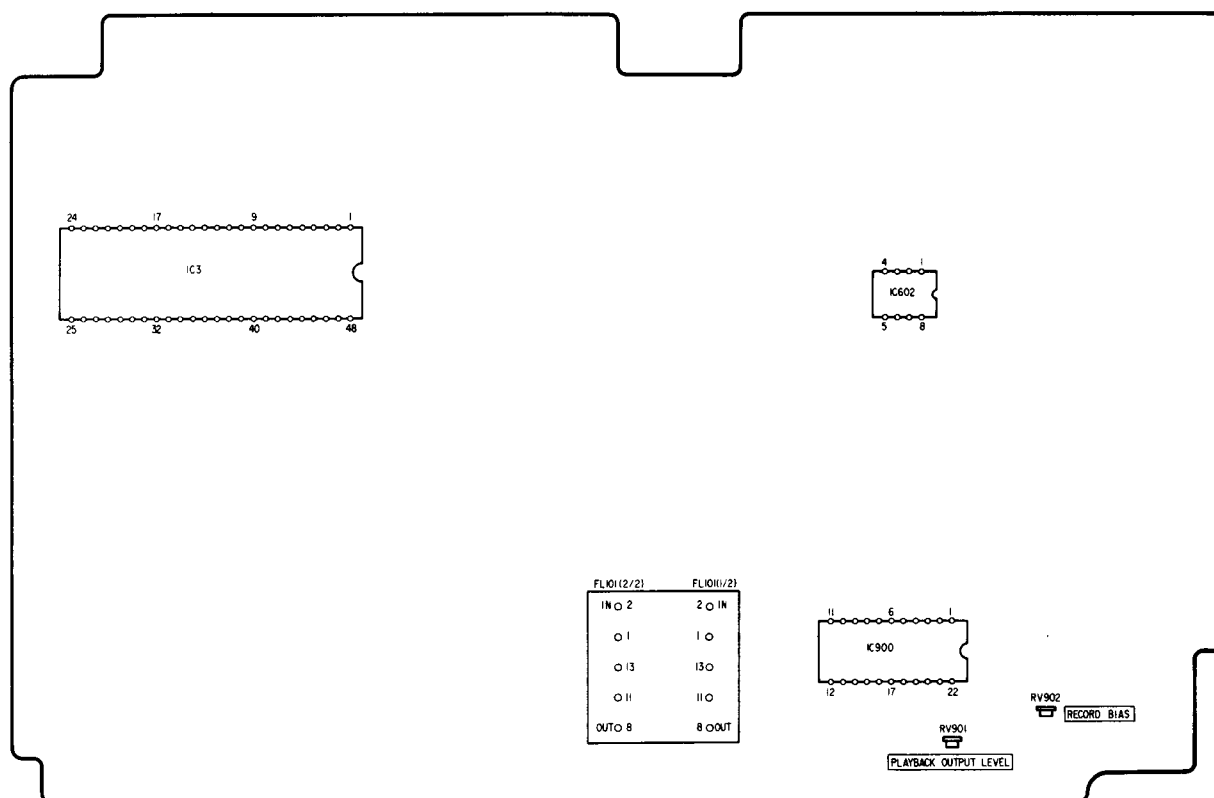
- Receive VTR RF modulator output on a TV.

Observe the TV video output in level on an oscilloscope, and select the same channel with the VTR. Receive RF modulator output on that TV, and adjust RV701 so that the video output level is about 91%  $\pm$ 3% relative to the previous level. In other words, the same picture will be a little darker when seen on the VTR.

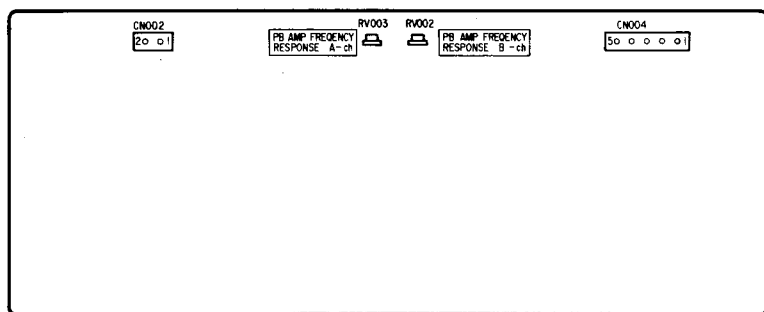
**VI-11 BOARD**  
(Conductor side)



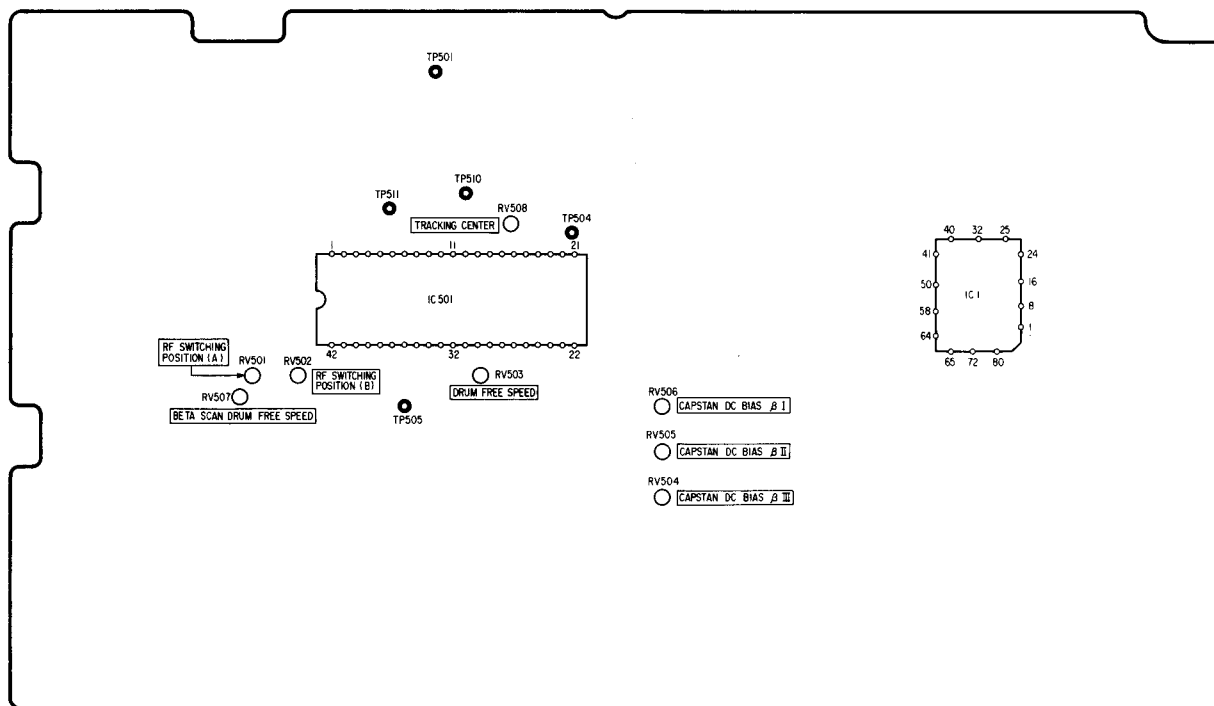
**AU-8 BOARD**  
(Component side)



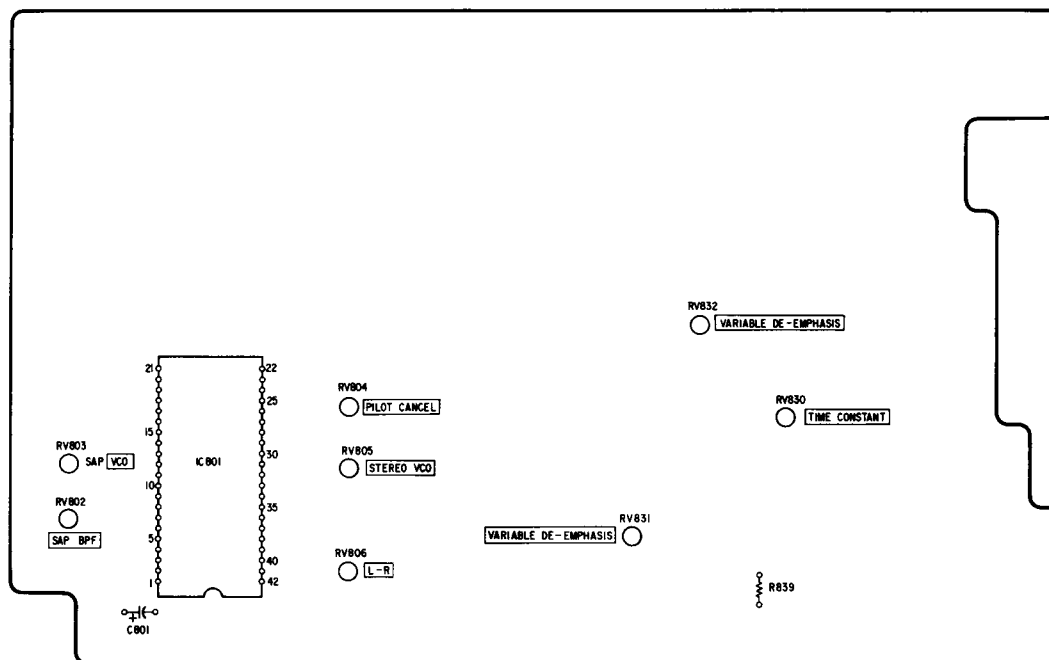
**RP-28 BOARD**  
(Component side)



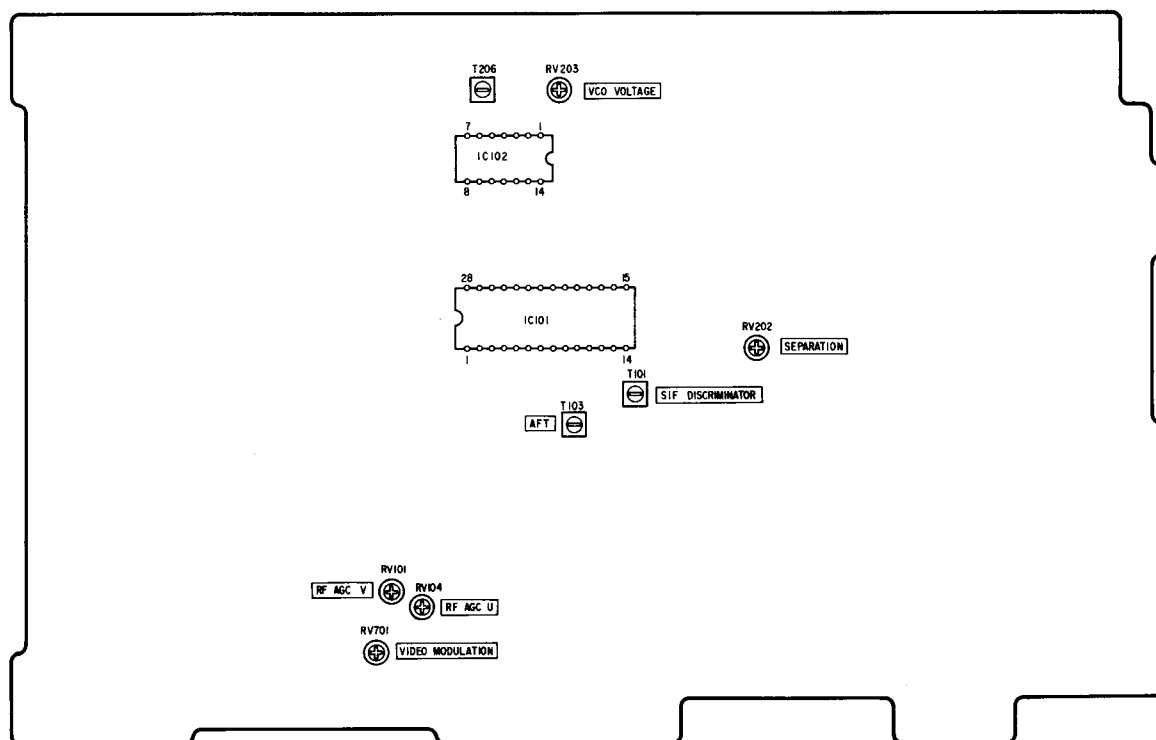
**SS-32 BOARD**  
(Conductor side)



**MP-7 BOARD**  
(Conductor side)



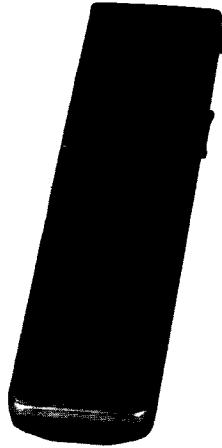
**TU-77 BOARD**  
(Component side)





# RMT-124

## SERVICE MANUAL



### SPECIFICATIONS

#### Remote Commander RMT-124

Remote control system

Infrared control

Power requirements

3 V dc, 2 size AA batteries (IEC designation R6)

Dimensions

Approx. 43 × 18 × 175 mm (w/h/d)  
(1¾ × ¾ × 7 inches)

Weight

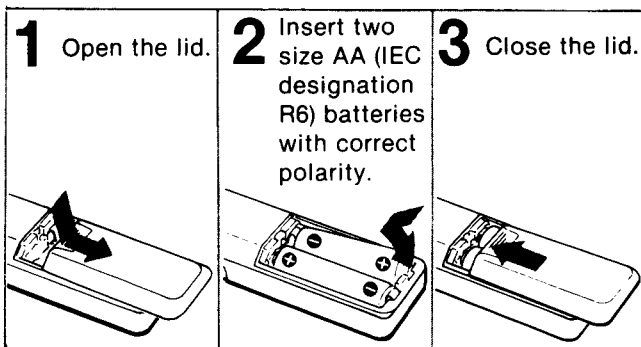
incl. projecting parts and controls  
Approx. 105 g (3.7 oz)  
incl. batteries

REMOTE COMMANDER  
**SONY**®

## 1. REMOTE CONTROL OPERATION

You can control almost all the functions of this video cassette recorder from your armchair using the supplied Remote Commander.

### BATTERY INSERTION

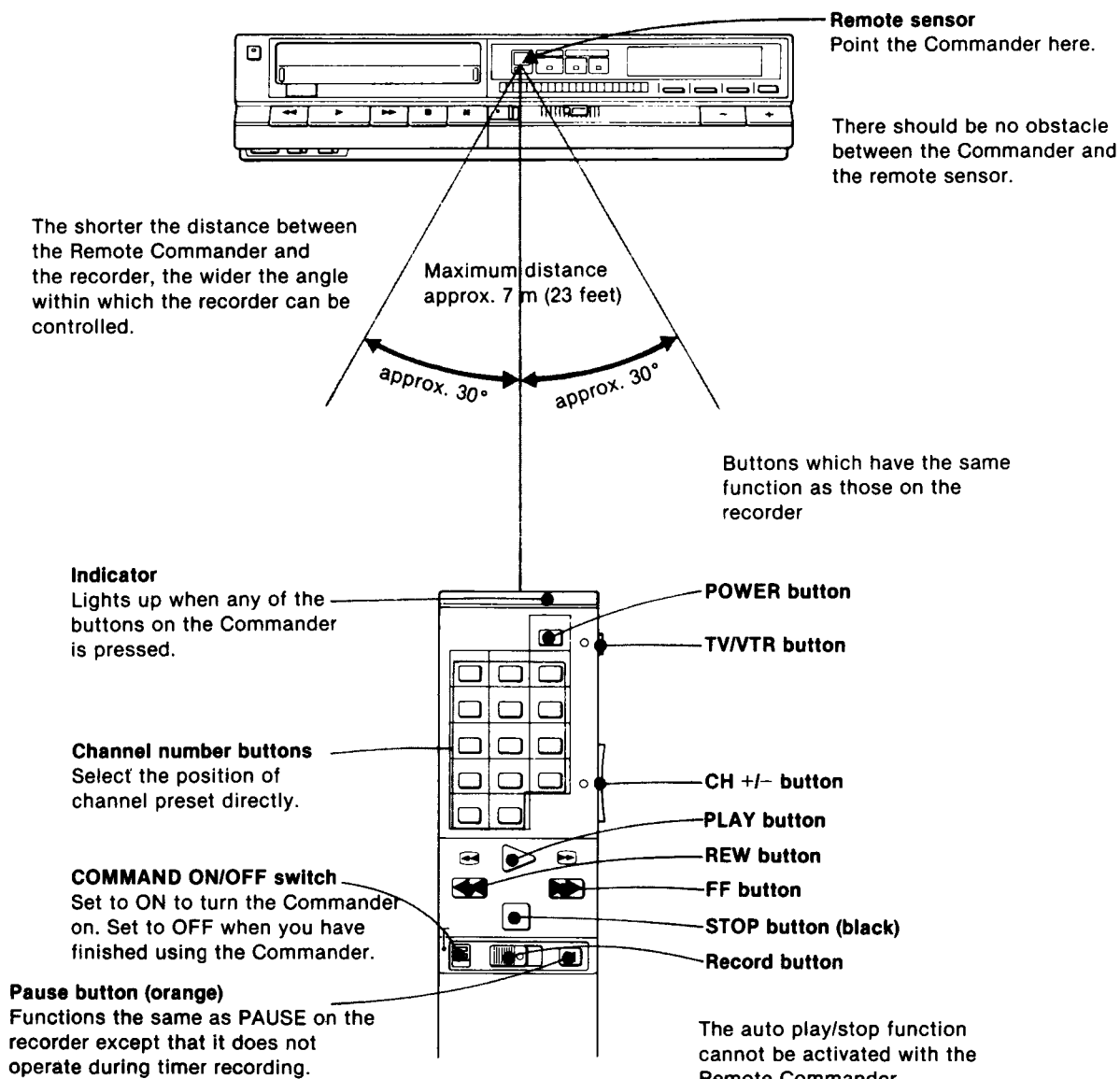


#### Battery life

In normal operation, batteries will last for about six months. If the range of the Remote Commander becomes noticeably shorter, replace the batteries with new ones. When the batteries are exhausted, the indicator will not light when the buttons on the Commander are pressed.

**If the Remote Commander is not to be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.**

### OPERATION

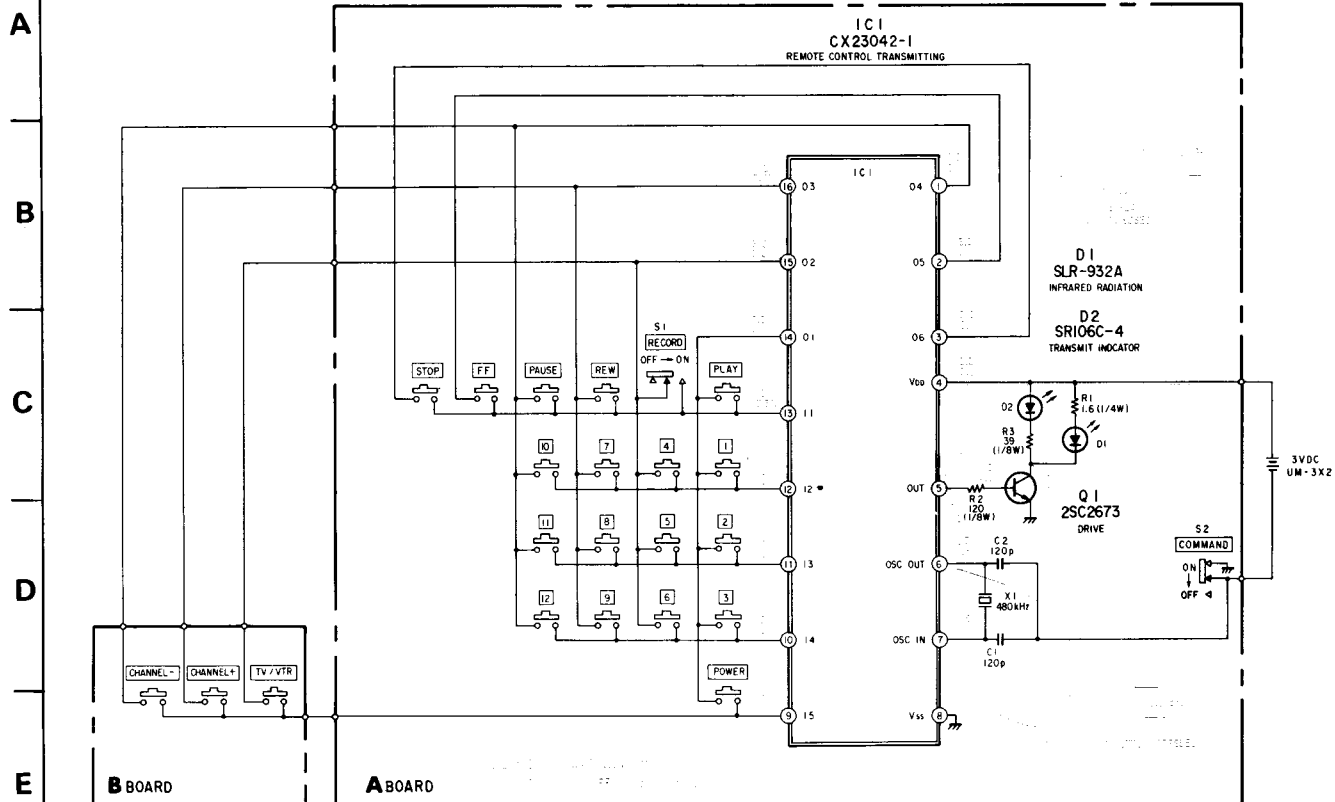




**A B**

1 2 3 4 5 6 7

## 2. SCHEMATIC DIAGRAM



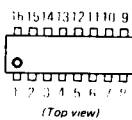
**Note:**

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\mu\text{F}$   
50WV or less are not indicated except for electrolytics.

When indicating parts by reference number, please include the board name.

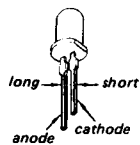
-  : Indicates a leadwire mounted on the component side.
-  : Indicates a leadwire mounted on the printed side.
-  Component side. (inner)
-  Component side.
-  Soldering side.

**CX23042-01**



(Top view)

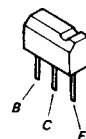
**SLR 932A**



**SR106C-4**



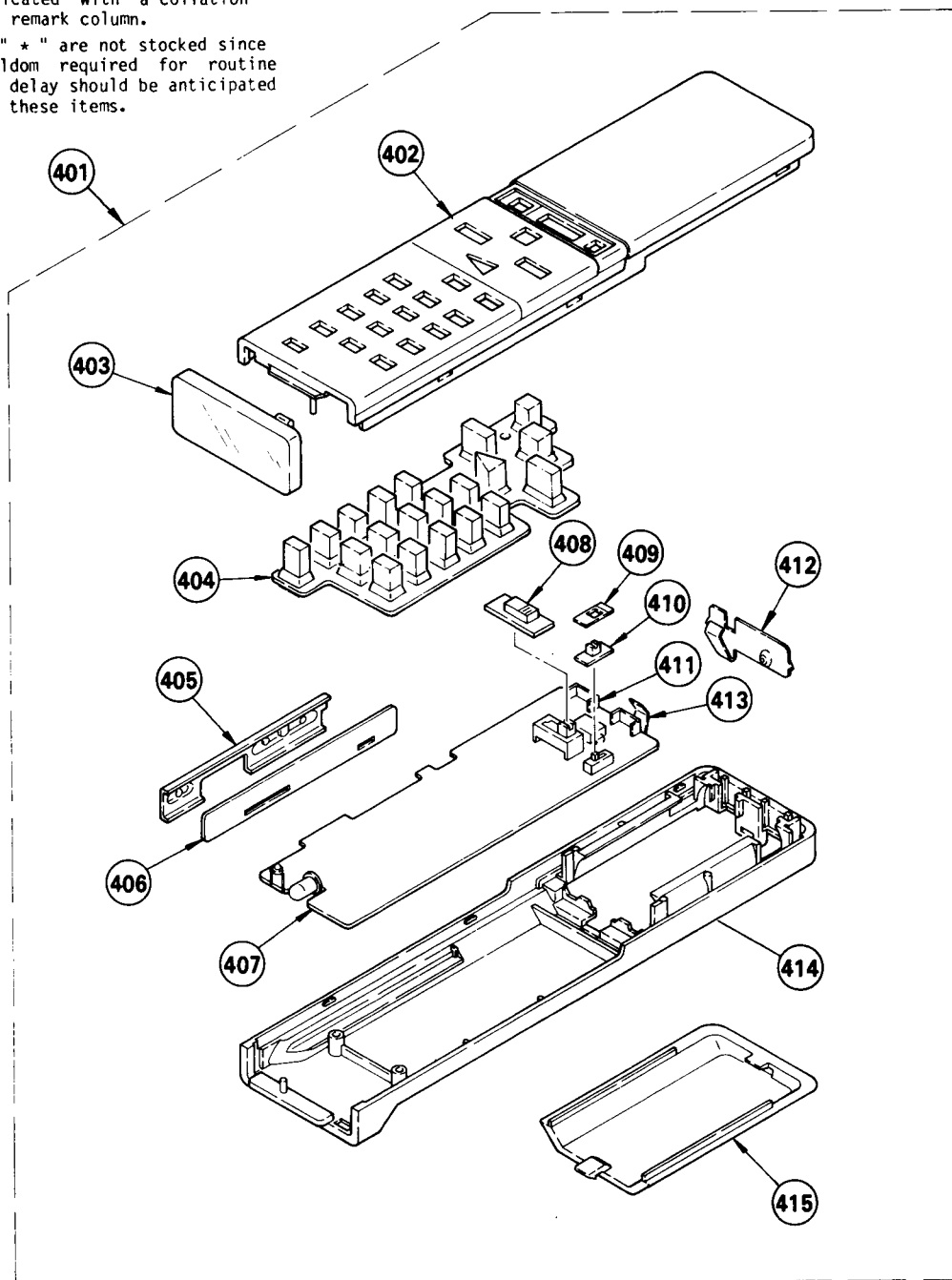
**2SC2673**



#### 4. EXPLODED VIEW

**NOTE:**

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.



| No. | Part No.       | Description                      | Remark  | No. | Part No.     | Description                      |
|-----|----------------|----------------------------------|---------|-----|--------------|----------------------------------|
| 401 | A-6765-479-A   | COMMANDER ASSY (BLACK)           | 402-415 | 409 | 2-387-113-11 | PLATE, COLOR                     |
|     | A-6765-480-A   | COMMANDER ASSY (SILVER)          | 402-415 | 410 | 2-383-127-01 | BUTTON, SLIDE                    |
| 402 | 2-387-112-01   | CASE (UPPER), COMMANDER (BLACK)  |         | 411 | 2-387-104-01 | TERMINAL (B), BATTERY            |
|     | 2-387-112-21   | CASE (UPPER), COMMANDER (SILVER) |         | 412 | 4-350-925-00 | TERMINAL (C), BATTERY            |
| 403 | 2-387-107-01   | PANEL, COMMANDER (FRONT)         |         | 413 | 2-387-103-01 | TERMINAL (A), BATTERY            |
| 404 | 2-387-111-01   | RUBBER (A), CONTACT              |         | 414 | 2-387-110-01 | CASE (LOWER), COMMANDER (SILVER) |
| 405 | 2-387-106-01   | RUBBER (B), CONTACT              |         |     | 2-387-110-11 | CASE (LOWER), COMMANDER (BLACK)  |
| 406 | *:1-612-165-11 | B BOARD                          |         | 415 | 2-387-105-01 | COVER, BATTERY (SILVER)          |
| 407 | *:1-162-164-11 | A BOARD                          |         |     | 2-387-105-11 | COVER, BATTERY (BLACK)           |
| 408 | 2-387-101-01   | BUTTON, RECORDING                |         |     |              |                                  |

## 5. ELECTRICAL PARTS LIST

### NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- RESISTORS
  - All resistors are in ohms
  - F : nonflammable
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS
  - MF :  $\mu$ F, PF :  $\mu$  $\mu$ F
- COILS
  - MMH : mH, UH :  $\mu$ H

When indicating parts by reference number, please include the board name.

| Ref.No | Part No.      | Description           | Remark |
|--------|---------------|-----------------------|--------|
|        | *1-612-164-11 | A BOARD<br>*****      |        |
|        | 2-387-103-01  | TERMINAL (A), BATTERY |        |
|        | 2-387-104-01  | TERMINAL (B), BATTERY |        |
|        |               | <u>CAPACITOR</u>      |        |
| C001   | 1-102-107-00  | CERAMIC 120PF 10% 50V |        |
| C002   | 1-102-107-00  | CERAMIC 120PF 10% 50V |        |
|        |               | <u>DIODE</u>          |        |
| D1     | 8-719-912-39  | DIODE SLR-932A        |        |
| D2     | 8-719-107-95  | DIODE SR106C-4        |        |
|        |               | <u>IC</u>             |        |
| IC1    | 8-759-910-90  | IC CX23042-01         |        |
|        |               | <u>TRANSISTOR</u>     |        |
| Q1     | 8-729-967-32  | TRANSISTOR 2SC2673-Q  |        |
|        |               | <u>RESISTOR</u>       |        |
| R1     | 1-247-073-00  | CARBON 1.5 5% 1/4W    |        |
| R2     | 1-247-809-00  | CARBON 120 5% 1/8W    |        |
| R3     | 1-247-797-00  | CARBON 39 5% 1/8W     |        |
|        |               | <u>SWITCH</u>         |        |
| S1     | 1-554-364-00  | SWITCH, SLIDE         |        |
| S1     | 1-554-364-00  | SWITCH, SLIDE         |        |
| S2     | 1-553-977-00  | SWITCH, SLIDE         |        |
|        |               | <u>CRYSTAL</u>        |        |
| X1     | 1-527-476-41  | OSCILLATOR, CERAMIC   |        |
| *****  |               |                       |        |
|        | *1-612-165-11 | B BOARD<br>*****      |        |
| *****  |               |                       |        |

